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SOME COMMENTS ON THE EARLY LITERATURE OF GERIATRICS IN AMERICA

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Recently there has been a great deal of interest shown in the treatment of the aged, so much so that one may obtain the impression that the study of geriatrics is of a comparatively recent origin. However, an examination of the literature reveals some very interesting facts in regard to this newest specialty.

The art of caring for the aged is as old as the art of scientific medicine. Hippocrates made a number of observations on the aged. He noted that as a rule they complained less than the young, but from his keen insight into disease he concluded that such chronic ailments that do occur in the aging body rarely leave it. He summarized the diseases of old age as follows[9]:

"Old men suffer from difficulty of breathing, catarrh accompanied by coughing, strangury, difficult micturition, pains at the joints, kidney disease, dizziness, apoplexy, cachexia, pruritus of the whole body, sleeplessness, watery discharges from the bowels, eyes and nostrils, dullness of sight, cataract, hardness of hearing."

Avicenna (980-1037) devoted one of his theses to the care of the aged. Thesis three of the preservation of health is entitled, "General Remarks on the Regimen of Old Age.[8]" Avicenna discussed such topics as diet, exercise, rest, and few drugs that should be administered in the case of bowel obstruction.

Roger Bacon's (1214-94) doctoral dissertation was entitled, "The Cure of Old Age and the Preservation of Youth[1]." It was this book which presaged the modern attitude in geriatrics.

The first work on geriatrics to appear in America was that of Luigi Cornaro, "Sure and Certain Methods of Attaining a Long and Healthy Life[5]." This work was written in the 16th century and translated and published in America in 1793. The preface to this first American edition was written by Joseph Addison and in it he elaborated on the efficacy of proper exercise. Cornaro's work written at the age of 83, enjoined the aged to be temperate in all things.

In 1805 Benjamin Rush published as part of his "Medical Inquiries and Observations" a chapter entitled, "An Account of the State of the Body and Mind in Old Age; with Observations on its Diseases." He attributed longevity to heredity, temperance, mental alertness, equanimity of temper and matrimony. "In the course of my inquiries I met with only one person beyond eighty years of age who had never been married[10]." He next discussed the phenomena of the body and mind which occur in old age. These phenomena were: "a great sensibility to cold; an appetite for food is generally increased; the pulse is generally full; the marks of old age appear earlier in those who have combined with hard labour, a vegetable or scanty diet; old men tread upon the whole base of their feet at once in walking; the breath and perspiration of old people have a peculiar acrimony; eyes

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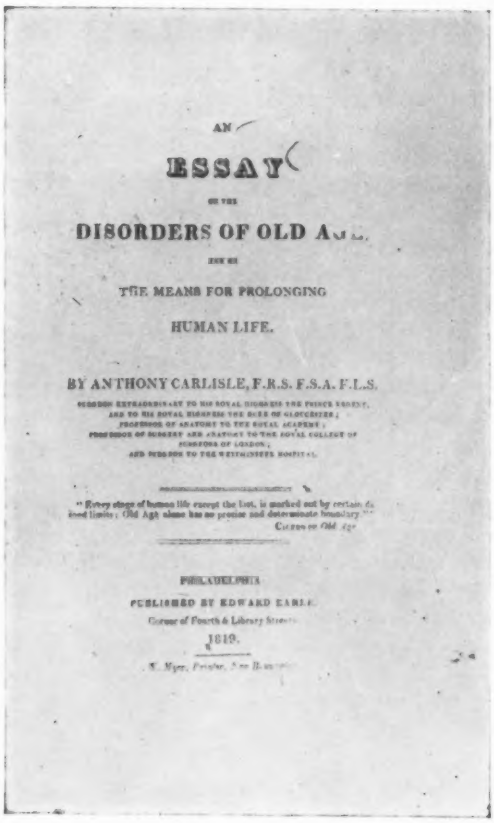
change to a light colour; failure of memory; moral or religious faculties were not impaired; dreaming is universal of old age, and the fear of death appears to be much less."

Next is discussed the diseases of old age, listed as: "weakness of the knees and ancles, pains in the bones, involuntary flow of tears, difficulty of breathing, costiveness, inability to retain the urine, wakefulness, giddiness, deafness, imperfect vision, inflammation of the eyes, pneumonia notha, colic, palsy and apoplexy, piles, difficulty in making water, and quartan fever."

The therapeutic measures to be taken were simple. Rush recommended the application of heat, warm clothing, company of young people, gentle exercises, cleanliness and bleeding.

In 1819 there was published in Philadelphia a little book entitled, "An Essay on the Disorders of Old Age," by Anthony Carlisle. Carlisle discussed the care of the aged almost entirely from the regulation of the diet. For as he said: ". . . the wholesome regulation of diet, clothing, exercise and air, are often more important than the administration of drugs, blisterings, or bleedings[3]." Therapeutic measures recommended were the use of cathartics and the judicious direction of bleeding. Dangerous operations were rarely advisable in advanced age, as old persons are seldom exempt from constitutional disorders.

Dr. Charles Caldwell in 1846 delivered a lecture before his class in the Medical Department of the University of Louisville. On the request of the class, this lecture was published in pamphlet form and entitled, "Thoughts on the Effects of Age on the



AN

ESSAY

ON THE

DISORDERS OF OLD AGE,

AND ON

THE MEANS FOR PROLONGING

HUMAN LIFE.

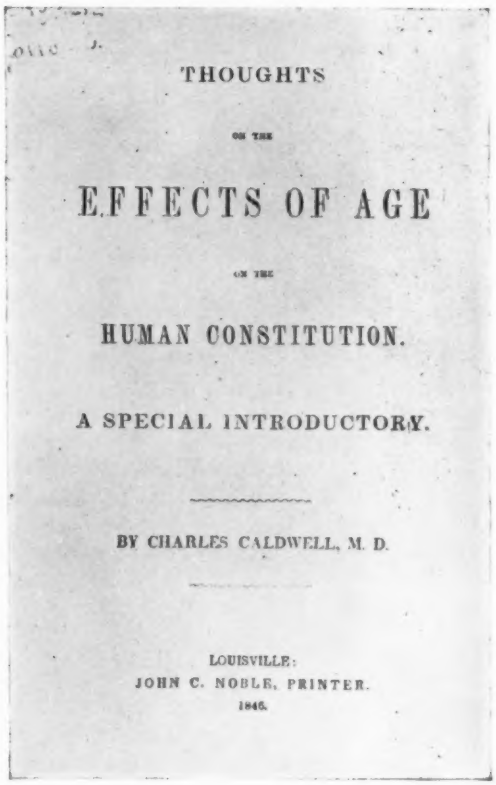
BY ANTHONY CARLISLE, F.R.S. F.S.A. F.L.S.

PHILADELPHIA:

PUBLISHED BY EDWARD EARLE,

1819.

Plate 1. Title page of Anthony Carlisle's "An Essay on the Disorders of Old Age."



THOUGHTS

ON THE

EFFECTS OF AGE

ON THE

HUMAN CONSTITUTION.

A SPECIAL INTRODUCTORY.

BY CHARLES CALDWELL, M. D.

LOUISVILLE:

JOHN C. NOBLE, PRINTER.

1846.

Plate 2. Title page of Charles Caldwell's "Thoughts on the Effects of Age on the Human Constitution."

Human Constitution[2]." Typical of Dr. Caldwell's lectures, this pamphlet reached the highest pitch of eloquence, but if one is able to separate the chaff from the grain, it all boils down to his recommendation of three observances: Strict temperance in all things, especially diet and drink, moderate exercise in the open air, and mental alertness.

The most important work to follow was by G. E. Day[6], who published an excellent monograph which foreshadowed the modern works to come. His discussions of the diseases of the aged were modern for their day.

By the middle of the 19th century geriatrics became a scientific study. Gradually facts were being accumulated which when combined with the vast experiences of J. M. Charcot and rounded out with the lectures of Alfred Loomis gave to the study of the aged its high perspective. The experiences of these two men were published in 1881 under the title, ". . . Diseases of Old Age[4]." Probably it can be said that with this work the early period of the study of geriatrics closed, and from then on the separation of speculative philosophy and physiology was completed. With the recognition of a type-physiology for this period of life the era ended for the traditionl school of the furred tongue, cloudy urine, and diet fads.

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WHAT IS DYSPNEA?

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Dyspnea means literally difficult breathing. According to Meakins[1], it is "the consciousness of the necessity of increased respiratory effort." It varies from the simple shortness on breath on strenuous exertion to the panting and persistent orthopnea of mitral stenosis in its latest stages. Dyspnea should be distinguished from hyperpnea which means an increase in the quantity of air breathed (increased minute volume) without any subjective feeling of distress. A person is said to be dyspneic whenever his respirations cannot be carried out easily and practically unconsciously; that is, he cannot draw in enough oxygen or expel sufficient carbon dioxide, or both handicaps exist. In a general sort of way, it is true that the greater his vital capacity, the less will be his tendency for dyspnea to develop for any given effort. A better correlation exists between his breathing capacity and the ratio of functional residual air to lung capacity. Normally the functional residual air (which is the amount of air left in the lungs after a normal expiration) should not be more than 35 per cent of the total pulmonary capacity; when it exceeds this value, impairment of alveolar ventilation exists. The higher this percentage becomes, the greater will be the tendency to dyspnea.

CLINICAL STATES IN WHICH DYSPNEA IS OBSERVED

Many different classifications for states of dyspnea have been proposed. One of the most useful to illustrate the mechanisms entailed in the production of dyspnea is that of Meakins[1] given below.

1. Diverse pulmonary diseases with either obstruction to the respiratory ventilation, diminished alveolar air space or decreased pulmonary vascular circulation.

2. Oxygen deprivation resulting from circulatory deficiencies, anemia and high altitude.

3. Interference with the respiratory ef-

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fort resulting from altered intercostal or diaphragmatic action.

4. Acidosis secondary to metabolic disturbances as exercise, hyperthyroidism, diabetes, nephritis and hyperinsulinism.

5. Organic neurologic lesions near the respiratory center.

6. Neuroses.

I. DIVERSE PULMONARY DISEASES IN WHICH THERE IS EITHER OBSTRUCTION TO THE RESPIRATORY VENTILATION, DIMINISHED ALVEOLAR AIR SPACE OR DECREASED PULMONARY VASCULAR CIRCULATION.

A. Obstructive dyspnea[2] may be caused by lesions in the upper air passages such as: (1) swelling of the mucous membranes due to infection or irritation; (2) tumors; (3) enlarged glands or aneurysms; and (4) foreign bodies. Obstruction of the larynx and trachea produces stridor with up and down movements of the larynx, sucking in of the supraclavicular and infraclavicular spaces and of the lower intercostal spaces. There is a pronounced indrawing of the epigastrium. Accompanying this, there is pulsus paradoxus in which the size of the pulse diminishes almost to complete disappearance during inspiration. As a rule, it is not difficult to detect this form of obstruction of the respiratory passages, but there may be great difficulty in localizing it. Laryngoscopic and bronchoscopic examinations are essential to decide whether the obstruction is from within by a foreign body or by acute laryngeal paralysis or whether it is caused from without by postpharyngeal abscess, enlarged thyroid or enlarged lymph nodes of the neck.

In bronchial asthma, constriction of the circular muscles of the smaller bronchi decreases the lumen and impedes the ingress and egress of air; edema of the mucosa and tenacious mucus further occlude the lumen. The dyspnea arises primarily from the respiratory effort involved; at first the increased pulmonary ventilation is due to the stimulation through proprioceptive reflexes in the lungs and secondarily to the anoxic anoxia. Because of the tremendous effort required to permit air to flow through the constricted orifices, there is marked elevation of the negative intrapleural pressure on inspiration.

There are times when it is very difficult to differentiate between the dyspnea of bronchial asthma and that of cardiac failure. Two tests[3] are of great value for this purpose. In the presence of dyspnea with a normal venous pressure (not over 10 cm. water) and with a normal circulation time (9-16 seconds), one is justified in excluding cardiac failure as the probable cause for the dyspnea. If the circulation time is prolonged and the venous pressure elevated, the dyspnea is most probably due to cardiac failure and not to uncomplicated bronchial asthma.

B. Pulmonary emphysema is a disease[4] in whic progressive distention of the alveoli takes place with rupture of the pulmonary membranes and the formation of enlarged air spaces of greater or lesser degree. The loss of pulmonary elasticity prevents the lungs from recoiling passively in expiration, and therefore muscular effort is needed to exhale. At the end of inspiration, the intrapleural pressure is almost atmospheric, and this further retards the expiratory ascent of the diaphragm. The overdistended lung flattens the diaphragm and keeps the lung in a state of "constant inspiration" thereby preventing the lungs from filling adequately when the patient breathes. The destruction of pulmonary membrane reduces the amount of lung available for absorption of air and contributes to the degree of arterial anoxia. The carbon dioxide content of the blood is elevated, and therefore inhalations of carbon dioxide do not stimulate respirations.

C. Distention or deflation of a lung stimulates vagal reflexes. These reflexes inhibit the respiratory center to end respiration either in inspiration or expiration as the case may be. Inflammation or edema of the lung make these vagal endings more sensitive so that they terminate the act of respiration quicker and thereby make breathing more rapid and shallow. This is a great disadvantage to the cardiac patient because it makes him breathe in and out chiefly the air which represents dead space.

II. OXYGEN DEPRIVATION RESULTING FROM CIRCULATORY DEFICIENCIES, ANEMIA AND HIGH ALTITUDES.

A. Cardiac dyspnea results from pulmonary engorgement leading to reduced distensibility of the lung, as in cardiac failure. While the lack of oxygen stimulates the aortic and carotid bodies, and an excess of carbon dioxide does stimulate the respiratory center, unless there is cardiac failure, these factors do not cause dyspnea of themselves. When there is cardiac failure, the lung is stiffened so that more muscular effort is required to distend it in inspiration. Expiration, instead of being a passive act, now becomes an active motion requiring an expenditure of a considerable muscular energy. The intrapleural pressure becomes positive at the end of expiration instead of remaining negative; therefore the dyspnea and diminishing vital capacity are due to the same cause. The lessened distensibility of the lung increases the sensibility of the Hering-Breuer reflex and this makes breathing shallow. It is entirely possible that morphine is beneficial in relieving the dyspnea of cardiac failure because it diminishes the sensitivity of the vagal nerve endings. The heart fails when the ventricles cannot receive and forward into the arteries enough blood to equal pressure in the great veins. As the systolic output falls and the diastolic volume increases, the minute output falls accordingly. In an effort to overcome this, the venous pressure rises constantly to force enough blood into the heart to keep the minute output adequate. This increase in the venous pressure, both systemic and pulmonic, impedes the venous flow and leads to distention of the tissues. In stiffening the lungs, it prevents reabsorption of fluids and promotes the establishment of pulmonary edema. All forms of cardiac dyspnea are therefore caused by increased venous pressure needed to attempt to make the failing heart put out an adequate amount of blood for peripheral circulation. The lungs, therefore, because of engorgement and stiffening, become inelastic; there is a fall in tidal air and vital capacity. The elastic fibers of the lung are stretched even on full expiration, and this lessens the negative intrapleural pressure to the point where it becomes positive. Since there is no storage of energy in the pulmonary elasticity (as happens normally) there is no "recoil" to make the lungs deflate during expiration. Therefore expiration becomes an active instead of a passive act. This naturally increases the amount of muscular effort needed during breathing and furthers the dyspnea. "He is short of breath because breathing itself is such hard work" (Dock).

B. Anemia also causes dyspnea. The dyspnea does not appear when the subject is at rest but does appear as soon as he begins to exercise. The explanation is simple. Despite the fact that the amount of hemoglobin is reduced in the blood and therefore there is less of it to carry oxygen to the tissues, enough oxygen is delivered to the tissues at rest because the hemoglobin is fully oxygenated while passing through the lung. In anemia, the cardiac output is increased and therefore oxygen is delivered to the tissues at a pressure greater than normal. When he starts to exercise, there is an increased demand for oxygen which cannot be met by compensatory factors; so he becomes dyspneic on exertion. This oxygen want stimulates the carotid body and hyperpnea results. When the hyperpnea reaches the dyspneic point, the patient becomes short of breath.

C. Another form of dyspnea[5] associated with dizziness and precordial distress is seen whenever there are large varicose veins of the lower extremities in which blood may be pooled. When the subject assumes the erect posture, there is a strain on the circulation and as much as 500 c. c. blood may be pooled in the lower extremities. This decreases the venous return to the heart, lessens the filling and consequently the cardiac output when the person is standing. Under these circumstances, a fall in blood pressure may be accomplished by the pressure sensitive areas of the carotid sinus and aortic arch and also by a compensatory contraction of the blood vessels of the abdominal viscera. The cardiac in-

dex (cardiac output per square meter of body surface) and stroke volume (amount of blood ejected with each systole) are higher than normal when such persons are recumbent because of the greater blood volume. When tilted so that the varicose veins fill, their cardiac output falls four times as much as normal, and the systolic blood pressure is lowered. This may be analogous to the situation where a man with a pendulous abdomen is relieved of his dyspnea and anginal pains by wearing an abdominal belt. After successful treatment of the varicose veins, the cardiac output is lowered with consequent relief of dyspnea and fatigue.

D. High Altitudes.

III. INTERFERENCE WITH THE RESPIRATORY EFFORT RESULTING FROM ALTERED INTERCOSTAL OR DIAPHRAGMATIC ACTION.

Abdominal distention (ascites, tumor) is characteristically associated with marked shortness of breath. This is an obvious cause of dyspnea and seldom occasions any diagnostic difficulties. The same statement may be made for crushing injuries of the chest or the operation of phrenic nerve interruption, both of which markedly restrict the normal thoracic motions. A more recently reported[6] manifestation of faulty diaphragmatic action is reputed to be the most common respiratory disorder seen in the British Army. Apparently some soldiers can endure the rigors of military training up to a certain extent beyond which they become hopelessly dyspneic. This is not due to fear, emotional disturbance or to malingering because all these factors have been successfully eliminated by thorough psychiatric investigation; it is not due to any lack of determination on the part of the individual soldier because no amount of perseverance will improve his "wind." On physical examination, the only pertinent findings are diminution of breath sounds at the bases together with diminished or absent expansion of the abdomen on full inspiration. The diagnosis is really made on the fluoroscopic examination during the course of which the diaphragmatic excursions are found to be slight, absent or paradoxical. The treatment consists of full breathing exercises. It is possible to arrange a mirror at an angle in front of the fluoroscopic screen so that the men may see their own diaphragmatic action and in this way can be trained to observe how deep breathing will restore them to full duty.

IV. ACIDOSIS SECONDARY TO METABOLIC DISTURBANCES AS EXERCISE, DIABETES, NEPHRITIS, HYPERTHYROIDISM AND HYPERINSULINISM.

Acidosis also causes dyspnea. Pulmonary ventilation resists the elevation of hydrogen ion concentration by blowing off carbon dixodie. When this no longer happens, the respiratory center is stimulated from reflexes initiated from chemoreceptors of the carotid and aortic bodies. The "alkali reserve" must drop to 12 volumes per cent before dyspnea supervenes. In the milder grades of acidosis, dyspnea occurs only upon exercise and not when the subject is at rest. When acid accumulates or base is lost from the body, reflexes are stimulated through the carotid body and sinus, and respiration is increased. This reduces the carbon dioxide tension of the alveoli and of the blood and maintains a normal alkalinity of the blood. When respiration is impaired, to a certain extent acids can be excreted through the kidney; after this fails, the body goes into acidosis unless oxygen is administered to increase the oxygen tension of the alveoli and of the blood. Nonchemical reflexes (cold, pain, emotion) may stimulate the respiratory center whenever there is any unusual demand for oxygen.

Increased metabolism also causes dyspnea. The normal person will become dyspneic after exercise greater than he is accustomed to performing. When pulmonary ventilation is more than five times the normal, the dyspneic point is reached. A trained athlete does not become dyspneic as easily as does an untrained person because he can tolerate the increased circulation rate of exercise; in addition, his neuromuscular coordination is superior and is not so easily disturbed; and finally, his vital capacity is better. In hyperthyroidism the dyspneic point is lower than normal. The person is literally exercising while at rest

so that any additional amount of exercise will produce dyspnea.

V. NEUROSES

Not infrequently, a patient will complain of breathlessness or of shortness of breath on moderate exertion, but no physical cause for his dyspnea can be ascertained. It is well under such circumstances to consider a psychic basis for his symptoms. What has been termed "sighing dyspnea" is a frequent complaint of psychoneurotics. As Maytum[7] pointed out, sighing is a normal response to fatigue or to mild emotional states. Under the influence of emotional strain, a patient will complain of being unable to draw a deep breath or of being dissatisfied with his breathing capacity. Haldane observed that anoxemia and fatigue of the respiratory center cause a sensation of constriction of the chest with difficulty in satisfactorily filling the chest. It is possible that the deep inspiratory efforts of the depressed patient induce a temporary anoxia which is perpetuated by efforts to correct the original defect. The diagnosis is seldom difficult if the condition is borne in mind; invariably there are other evidences of a psychoneurosis.

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THIOURACIL IN THYROTOXICOSIS

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Thyrotoxicosis has definitely defied our therapeutic armamentarium. Rest, iodionization, roentgen therapy and the various surgical measures are offered; subtotal thyroidectomy on the properly prepared patient is considered the most satisfactory management. Of course, mention should be made of quinine hydrobromide, di-iodotyrosine, the ergot alkaloids, prostigmine bromide, calcium and the estrogens; there is much to be considered in the pre- and postoperative management as well as the many anesthetic and technical factors. Yet, regardless of the cooperativeness of internist, roentgen therapist and surgeon, the end result is often most unsatisfactory. There is no point in a review of various post surgical difficulties which as immediate, delayed or remote, occur for various reasons beyond the control of the internist and surgeon; Jackson[23] numerically lists 28 surgical complications. The inadequacy of our competency to manage hyperthyroidism is indicated by the enthusiastic reception of thiouracil (2-thio-6- oxyprimidine). A review of recent publications on therapeutic research reveals thiouracil runs second in prominence only because penicillin is its competitor.

The history of thiouracil has been repeatedly reviewed; Williams'[24] historical summarization is most complete. Briefly, suppression of thyroid activity in experimental animals by sulfonamide,[1, 2] thiocarbamide[3] and thiourea[4] compounds led to clinical confirmatory[5, 6, 7, 8, 9, 10] reports. In 1943 there were the simultaneous reports of Astwood[16] and the Mackenzies; now already the bibliography is too lengthy for routine publication. At this time 2-thiouracil is the most effective of a survey of more than one hundred compounds by Astwood, but continued research may soon produce a more effective and even less toxic preparation.

Adequate histologic studies on experimental animals agree closely with surgically removed human thyroids[10, 11] controlled by biopsy prior to instituting thiouracil therapy. The expected response is marked hyperplasia[2, 4] in excess of the hyperplasia of hyperthyroidism with concomitant reduction in colloid content. The physiologic explanation experimentally determines this goitrogenous action to result

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from prevention of thyroxine synthesis in the thyroid. Failure in thyroxine production leaves uninhibited the anterior[1, 16] pituitary producing thyrotrophic hormone[17] with a resultant hyperplastic but hypofunctioning thyroid. Dempsey[18] suggests thiouracil neutralizes peroxidase, the enzyme necessary for the conversion of diodotyrosine to thyroxine.

Thiouracil therefore does not neutralize preformed hormone. Beardwood[21] gives an adequate clinical abstract of the physiologic investigations with illustrative theorization.

ADMINISTRATION

Thiouracil is rapidly absorbed (within two hours) and excreted[15] and therefore is satisfactorily given orally; it has no odor but a definitely bitter taste. There is no advantage to the intravenous sodium salt, for despite the fact that 15 per cent of the orally administered drug is destroyed in the gastrointestinal tract, an effective blood level is obtained and maintained by frequent small doses orally with distribution throughout essentially all of the tissues and fluids of the body. There is no evidence of cumulative action even in individuals with renal or hepatic insufficiency. Dosage has varied greatly in the publications.

Williams and his collaborators[15] substantiate the need for only frequent small doses, no one has proved advantage to large doses. We have used 0.1 gm. to 0.2 gm. at five fixed intervals daily, reducing this gradually to a maintenance done of 0.1 gm. three times a day when normal basal metabolic readings are obtained. For subsequent maintenance 0.05 gm. twice daily is given after six weeks of clinical control of thyrotoxicosis. Williams[24] more recently advocates an average dosage of 0.6 gm. daily at onset. It has also been shown[19] that concomitant iodine administration in guinea pigs results in greater concentration of thiouracil in the thyroid while concomitant thyrotrophic hormone administration decreases thyroid thiouracil deposition. This has led us and others to use iodides concomitantly or intermittently with thiouracil to enhance its action and at the same time hoping to reverse some of the hyperplastic changes. We state this realizing Astwood and the Mackenzies showed enhancement of hyperplasia by concomitant administration in experimental rats.

We have kept our patients continuously on 0.1 gm. of thiouracil daily, whenever possible, for six months or longer after clinical remission and then individualized the case to give either iodine or thyroid extract (or thyroxine) intermittently.

As a general rule, judging from detailed reports, clinically and experimentally, most instances will show recurrent hyperthyroidism, at varying intervals, after cessation of thiouracil administration. It is therefore indicated that a small dose of thiouracil be continued until the endocrine imbalance has been rectified.

It has been suggested by some investigators that as a final measure roentgen therapy should be used to close the issue. Grollman and Gryte[22] have had fortunate results occasionally applying x-ray exposure.

TOXICITY

Toxicity is admitted. These undesirable side effects have not been sufficient to nullify any of the enthusiasm of investigators but should be appreciated in the realization of the danger and in stimulation for research production of a less toxic product.

Besides these toxic factors one must be cognizant of the fact that when a foreign chemical is used to control or abort physiologic endocrinous function involving the thyroid, anterior pituitary and possibly the adrenal cortex there may be yet unrecognized contraindications to the continuance of this therapy. Changes approaching myxedema may be considered an untoward effect.

Transient nausea,[13, 14] a sweet odor to the breath (more with thiourea) and the inconstant transient elevation in non-protein nitrogen are not of importance. Less significant untoward effects such as nonhematologic oral infections and mild "drug fever"[7] may warn one to proceed with caution. Arthralgia[14] lymphadenopthy, generalized edema[14] without evidence of renal involvement, periorbital edema with lacri-

mation[21] and the dermatidies[14] (maculopapular and morbilliform) including urticaria, probably indicate an allergic idiosyncrasy. All of the above have responded without therapy on discontinuance of thiouracil and are held to be relatively insignificant. Williams and Clute[14] report continuing thiouracil despite a morbilliform rash in four cases and observed the dermatitis to subside; similar experience has been reported by others. Beardwood and Levison[21] report a single incident of hoarseness and impaired motion of the right vocal cord associated with increased thyroid-megaly; both were transient.

Probably of more severe foreboding, despite the disregard of some researches, are:

1. *Hepatitis*: This has been infrequent, no mortality has been reported; it may be allergic, toxic, or actually a part of the thyrotoxicosis. Withdrawal or active hepatic protection is indicated. Accurate hepatic studies are reported indicating cellular damage.

2. *Hemopoietic disturbances*: These have attracted the most prominence but seemingly do not carry a severe prognosis.

a. Leukopenia[11] is usually mild and transient.

b. Agranulocytosis[4, 12, 14] is relatively rare but considered the most dangerous reaction; immediate withdrawal, pentnucleotide and parenteral liver extract are advocated.

c. Anemia: three of our cases showed a hypochromic microcytic anemia; one such instance suggested an early aplastic anemia but no marrow studies were made and the response to hematinics was prompt.

CLINICAL EVALUATION

The effectiveness of thiouracil therapy is generally measured by:

1. General clinical improvement:

a. Weight gain.

b. Return of blood pressure and pulse rate to normal limits.

c. Subsidence of vasomotor extremes; tremor, swearing, emotional instability, diarrhea.

d. Return of strength and resistance to fatigue.

e. Improved tolerance for heat.

2. Laboratory evaluation:

d. Return of strength and increased resistance to fatigue.

b. Serum cholesterol values of normal reading. (Other laboratory studies are too variable to be of value.)

In general, clinical improvement parallels the drop in metabolic rate but, as has been experienced with thyrotoxicosis managed surgically, the entire physiologic state does not return to "normal" as promptly.

All of our patients showed some weight gain although there was considerable variability. Vasomotor phenomena responded slowly but definitely and contrasted well with what one expects in the well managed thyroidectomized patient. Return of strength and resistance to fatigue were not notable, most of our patients persisted in complaints of languidity when the result was otherwise notable and a sense of well being was otherwise appreciable.

Comparative to the statistics of Rawson[10] and others, response of the basal metabolism was uniformly satisfactory with the expected delay due to previous lugolization. In most instances the response in our cases was more delayed than in other reports to date. We did not find, however, the tendency toward myxedematous curves reported by others and this is possibly due to the fact that all of our patients were previously and concomitantly lugolized. We are therefore adhering to a program of prethiouracil lugolization and individualize some cases for continued or intermittent concomitant iodide administration. Occasionally thyroid was used to combat manifestations suggestive of a progression toward myxedema. Iodine administration may be rationalized by theorizing that hyperplasia indicates a deficiency possibly of iodine as substantiated by Marine's animal experimentation.

MANAGEMENT OF TRIAL CASES

Our routine required removal of all sedation and a ten-day abstinence from iodides. No measures were initiated until a satis-

Case Sex Age	Type	Duration Disease	B.M.R. Initial	B.M.R. 3 mos.	B.M.R. 6 mos.	B.M.R. 12 mos.	Initial Dose Thiouracil	Interval Before Response	Maintenance Dose Thiouracil	Duration Observation	Cholesterol Initial	Cholesterol Final	Toxicity	Result
V.J.M. M 46	Masked	24 mos	+40	+17	-12	-26	2 gms Daily	20 wks	0.1 gm. Daily	12 mos	110		?Asthenia	Excellent
D.M.G. F 31	Diffuse	3 wks	+27	+6	-7	+3	1 gm Daily	1 wk.	0.1 gm Daily	14 mos	138	225	Nausea Fever	Excellent
E.P.S. F 29	Diffuse	9 wks	+33	+30	+24	+38	2 gms Daily	-	0.3 gm Daily	12 mos	112	130	Anemia Neutropenia	Poor
J.O.M. M 30	Diffuse	3 wks	+27	+23	+12	+9	2 gms Daily	4 mos.	0.3 gm. Daily	12 mos.	100	230	None	Fair
J.M.R. M 26	Nodular	4 mos	+38	+2	-6	-2	2 gms Daily	6 wks	0.1 gm. Daily	14 mos.	125	235	None	Excellent
E.E.I. M 24	Nodular	3 mos	+33	+6	-12	-8	1 gm Daily	2 wks	0.1 gm Daily	12 mos	170	210	None	Excellent
J.H.M. M 46	Masked	6 mos	+52	+12	+2	+4	2 gms Daily	4 mos	0.1 gm Daily	12 mos	—	240	None	Excellent
W.J.K. F 28	Nodular	3 mos	+22	+2	+6	-8	1 gm Daily	2 wks	0.1 gm Daily	10 mos.	162	210	None	Excellent
G.G.R. M 58	Diffuse	6 mos	+28	+6	-8	—	2 gms Daily	6 wks.	0.1 gm Daily	11 mos	—	—	None	Excellent
O.C.B. M 28	Nodular	2 mos	+16	-2	-8	-12	1 gm Daily	1 wk	0.1 gm Daily	12 mos	158	225	None	Excellent
J.T.L. M 42	Nodular	8 mos.	+42	+8	+6	+6	2 gms Daily	8 wks.	0.1 gm. Daily	10 mos	136	210	None	Excellent
L.M.B. F 48	Nodular	14 mos.	+68	+33	+18	+4	2 gms Daily	7 mos.	0.3 gm Daily	14 mos	108	238	Nausea Anemia Fever	Satisfactory
R.D.E. M 22	Masked	6 mos.	+28	+2	-6	-8	1 gm. Daily	2 wks.	0.1 gm Daily	12 mos.	—	265	None	Excellent
J.R.R. M 41	Nodular	2 yrs	+40	-20	-	-	2 gm. Daily	3 wks	0.1 gm Daily	3 mos.	160	—	Fever Anemia	Reserved for further observation
T.A.M. M 29	Diffuse	2 mos	+18	+7	+6	-	1 gm. Daily	3 wks.	0.1 gm Daily	9 mos.	180	-	None	Reserved for further observation
F.T.G. F 26	Diffuse	2 yrs	+16	+8	+7	—	1 gm. Daily	6 wks	0.1 gm Daily	9 mos.	—	—	None	Reserved for further observation
E.J.R. M 39	Masked	18 mos.	+27	+12	-8	—	1 gm. Daily	4 mos	0.1 gm Daily	9 mos	170	—	Fever	Reserved for further observation
D.A.R. M 26	Masked	3 mos	+33	-8	-	-	1 gm Daily	1 wk	0.1 gm Daily	4 mos	162	-	None	"
G.S.B. M 42	Nodular	6 mos.	+22	+2	-	-	1 gm. Daily	2 wks.	0.1 gm Daily	4 mos	176	—	Nausea Fever	"
E.L.L. M 16	Nodular	2 mos.	+18	-6	-	-	1 gm. Daily	1 wk.	0.1 gm Daily	4 mos	158	-	None	"

factory baseline in basal metabolic rate had been obtained. An abnormal galactose tolerance test was prerequisite.

1. A dietary regime of 3500 calories contained a minimum of 100 grams of protein and attempted to attain 500 grams of carbohydrate.

2. Rest to the extent of ten hours' bed rest at night supplemented by two hours in interval rest during the day was suggested. None of our patients were hospitalized because of the prolonged period of observation on the drug.

3. Thiouracil was administered as previously stated. The initial does of 1 gram, or at most 2 grams daily was contin-

ued until improvement was substantiated, then gradually reduced to a maintenance minimum of 0.1 gram daily which can probably be continued indefintely judging from the absence of side effects in properly observed reports appearing in the literature and from our own findings.

4. Periodic hematologic studies must be insisted upon and it is probably wise to do bi-weekly blood surveys.

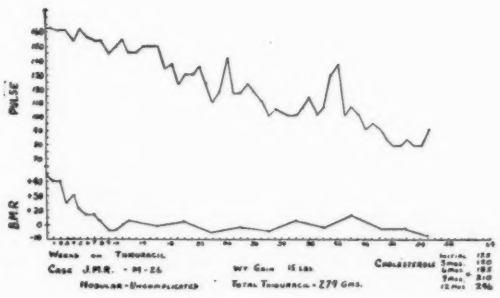
5. If practical, a basal metabolism should be done as outlined in our illustrative charted cases.

CLINICAL APPLICATION

Astwood[20] demonstrated the effectiveness of thiouracil in lowering the basal metabolic rate and producing clinical remission. This has been confirmed in numerous clinical[8,14,2] studies with satisfactory response. The time necessary to return the basal metabolic rate to normal has varied greatly, that is, from one week to six months with the general conclusion that pre-iodinization delays the thiouracil response. Possibly unusual storage of preformed hormone may also play a part in such delayed response.

Continuously administered, thiouracil has produced clinical myxedema.[6] This effect is reversible by discontinuance of the drug and administration of thyroxine or thyroid extract. It is conceivable that by intermittent administration with thyroid and even combined with iodinization we may conceivably produce atrophic changes or, at least, carry the patient through toxicity into an adjusted endocrine period and thereby actually achieve a medical thyroidectomy. Astwood[4] apparently has such an ambition for thiouracil. Most contributors have ameliorated their reports with surgery for selected cases. Many limit thiouracil to a preoperative measure. Clinical reports are extensive and there is accumulating a sizable study for evaluation which will bring conclusions of note when sufficient time permits accurate evaluation.

Assuming the attitude that many instances of thyrotoxicosis may be managed medically, we, as have others, have been guilty in the past of permitting an occasional patient to become "iodine fast." To this time there are no reports of "thiouracil fast" instances. With this reassurance we have selected our group of mild thyrotoxics and attempted medical thyroidectomy. Our results are charted.

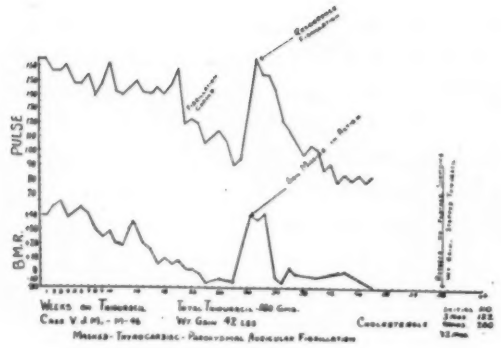


METABOLIC STUDIES

As would be expected, the blood cholesterol responds in a reverse relationship to change in the basal metabolism. Most complete studies have confirmed this. Beardwood and Levinson[21] found this uniformly; they reported a group of cases with periorbital edema associated with high cholesterol values. These authors also depicted the response in galactose tolerance and creatinine metabolism but indicate the lack of specificity of galactose tolerance as a diagnostic test in hyperthyroidism.

In our study, however, as an aid to accuracy in diagnosis we required a definitely positive galactose tolerance, blood cholesterol below 180 mgm., in addition to a pathologic, clinical and basal metabolic evaluation. The galactose tolerance was not repeated at the end of observation; in those on whom the blood cholecterol was checked it was confirmatory of the therapeutic efficacy of the drug.

We present charts of two patients which show their response to thiouracil. Prior to the use of this drug we would have previously definitely elected surgical interference.



CONCLUSIONS

1. It is substantially proved and in agreement with our observation that thiouracil reduces the basal metabolic rate elevation attributable to thyrotoxicosis and concomitantly brings clinical improvement by virtue of inhibition of hormone production by the thyroid.

2. The toxicity of thiourea was reported to be of high incidence,[2] thiouracil appears safer and of equal or greater therapeutic effectiveness. Newer products will likely improve therapeutic efficiency with minimal toxicity. As yet, the toxicity of thiouracil certainly does not nullify its value in therapeusis.

3. The advantage of thiouracil is that possibly we may suppress thyroid activity and yet expect reversibility and in so doing control thyrotoxicosis more effectively than by subtotal thyroidectomy with its inherent dangers of myxedema, residual or recurrent thyrotoxicosis plus surgical risk.

4. Unlike most authors we have had instances of failure of response to thiouracil after adequate observation. We have no explanation for this lack of response.

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PLASMOCHIN INTOXICATION

REPORT OF A CASE

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Plasmochin, a quinoline derivative, was synthesized by Schulemann, Schoenhoefer and Wingler[1] through alteration of the structure of methylene blue, the antimalarial properties of which were already recognized by Ehrlich in 1891. This specific and highly potent antimalarial exerts a destructive action on the schizonts and merozoites of *P. vivax* and *P. malariae* but not on those of *P. falciparum;* it will destroy gametocytes of all three species and even in minimal doses renders them non-infectious for mosquitoes. Plasmochin should not be relied upon to cure any malarial infection but should be used along with quinine or atabrine for its effect on gametocytes.[2] Although systematic administration of plasmochin to carriers of tropical malaria should promote eradication of this disease through extermination of sexual forms, its high toxicity necessitates constant medical supervision and therefore restricts it as a form of malarial control.

The toxicity of plasmochin is unaltered when combination therapy with quinine is employed[3] but appears to be enhanced by simultaneous administration of atabrine. Decherd[4] observed a fatal reaction in a patient who received 0.6 gram atabrine and 0.03 gram plasmochin daily for two days. When combination therapy is employed, the course of plasmochin may be given following atabrine therapy with or without a rest period.[5] Most workers allow an interval of several days to elapse so that atabrine levels of the blood may fall to inconspicuous values before institution of plasmochin treatment. Walker[6] has suggested simply examining the urine in the sunlight; absence of atabrine coloration is a safe indication for administration of plasmochin. Mann and Smith[7] recorded a case of intense hemoglobinuria occurring when a three-day period was permitted to elapse between completion of a course of atabrine and initiation of plasmochin therapy in doses of 0.01 gram three times a day for four days. Sein[8] reported appearance of hemoglobinuria in a patient after administration of 0.04 gram plasmochin alone daily for six days. Dosage levels of 0.06 and 0.04 gram a day are associated with toxic manifestations in about 15 per cent of cases.[9] Craig and Faust[2] recommend 0.01 gram three times a day for five or six days.

REPORT OF CASE

G. K., a 32 year old white Greek sailor who had just returned from Central America, entered Touro Infirmary on January 17, 1945, complaining of frontal headache, generalized body pain and high fever for about one week. There were no chills. The patient was well developed and well nourished but apparently acutely ill; he was lethargic and at times incoherent. Aside from a temperature of 101.8°F., a pulse rate of 110, moderate dehydration, and questionable jaundice, the physical observations were within normal limits.

Blood count showed 3,350,000 red blood cells, 4,600 white cells with 66 per cent neutrophils, 32 per cent lymphocytes, and 2 per cent eosinophils. Hemoglobin was 68 per cent and icterus index 12. The blood film showed ring forms of *Plasmodium falciparum.* Results of urinalysis, serologic test, and agglutination reactions were all normal.

Atabrine was administered in doses of 0.1 gram three times a day for five days. The temperature dropped to normal on the second day following initiation of treatment. By error, plasmochin therapy was instituted the day after completion of the course of atabrine; a dose of 0.08 gram was given every six hours for four doses (total of 0.32 gram plasmochin in 24 hours). The patient was feeling well when discharged by the Immigration Department on January 24, 1945, before the error was recognized. Twenty-four hours later he noted nausea, vomiting, moderate upper abdominal discomfort, and presence of "black urine." The following day he had a severe chill; nausea, vomiting, and abdominal pain persisted.

When re-admitted to Touro Infirmary 48 hours after his previous discharge (January 26, 1945), the patient was in collapse. The skin felt cold and clammy and was a yellowish, muddy color. There was obvious pallor. The mucous membranes were moderately cyanosed, and the sclerae were yellow. Blood pressure was 96/60, the pulse rate 100, the pulse volume poor but the rhythm regular. His temperature was now 96.8°F. The patient complained of intense fatigue and appeared extremely

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lethargic. The only other significant physical observation was severe dehydration.

Blood count at this time revealed a hemoglobin of 32 per cent, 1.4 million red blood cells, 6,600 white cells with 60 per cent neutrophils, 29 per cent lymphocytes, 9 per cent monocytes, and 2 per cent eosinophils. Thick smears were negative for malarial parasites. NPN was 90 mg. per cent, blood sugar 89 mg. per cent, and the icterus index could not be done because of intense pigmentation of the serum. The van den Bergh reaction showed 0.92 mg. per cent bilirubin, with 58 per cent in the "direct-reacting" form. A qualitative methemoglobin determination indicated the presence of this compound. The urine was acid and chocolate colored with a specific gravity of 1.028; a few pus cells and three to four granular casts per HPF were seen. No bilirubin could be detected in the urine, but copious amounts of hemoglobin were present.

Therapy consisted of intravenous administration of 10 per cent glucose solution in daily amounts of 2000 c. c., supplemented by oral administration of sufficient fluid to maintain the urine output at 3000 c. c. every 24 hours. The urine was alkalinized with sodium bicarbonate in quantities sufficient to maintain an alkaline urine reaction. In the first twelve hours 1500 c. c. of whole blood were transfused and on the following day an additional 500 c. c. Choline was given in doses of 0.5 gram three times a day.

The patient responded to treatment. Hemoglobinuria cleared in four days, and on the seventh day the blood count showed 3,740,000 red blood cells and 68 per cent hemoglobin. The patient felt perfectly well when discharged on February 3, 1945.

DISCUSSION

The margin of safety of plasmochin is relatively narrow, and its most striking toxic reactions are related to the erythrocytes. Cyanosis and methemoglobinemia are the commonest effects of full doses; the former usually appears first and demands immediate cessation of drug administration. Chopra and Chaudhuri[10] noticed cyanosis three days after cessation of plasmochin therapy, administered in doses of 0.05 gram daily for six days, but no other abnormalities were discovered. Molitor[11] has emphasized that following plasmochin therapy there is prompt formation of methemoglobin, produced by oxidation of reduced hemoglobin. Fischer and Rheindorf[12] reported occurrence of methemoglobinemia regularly following daily administration of 0.08 to 0.10 gram plasmochin. Cyanosis appears when methemoglobin constitutes about 10 per cent of the total blood pigment.[13]

Rapid breakdown of erythrocytes is characteristic of the picture seen in other acquired acute hemolytic anemias. Within 24 hours after administration of toxic doses, onset of acute hemolysis may coincide with disappearance of several million erythrocytes and their hemoglobin, as in the case herein reported. The serum and urine contain large quantities of hemoglobin and methemoglobin, presumably derived from the action of the drug on the hemoglobin. Hemoglobinuria occurs when the serum level exceeds 150 mg. per cent. Clinical manifestations include pallor, cyanosis, extreme weakness, dyspnea, and palpitation, associated with nausea and vomiting. Sudden contraction of the spleen caused by plasmochin often produces acute pain in the upper left quadrant.[14]

The mechanism of hemolysis is not entirely clear. It does not appear feasible that its formation can be attributed solely to plasmochin, since this drug requires a concentration of 1:5000 for its production.[3] If all plasmochin administered to the patient herein reported were freely diffusible in the body water, it may be calculated that the concentration of plasmochin was about 1:100,000. Interestingly enough, Mann and Smith[6] were able to demonstrate hemagglutinins in the serum during acute hemolytic anemia associated with plasmochin intoxication. These may possibly resemble the autoagglutinins seen in hemolytic anemia related to sulfanilamide administration.

Baker and Dodds[15] and DeGowin, Warner and Randall[16] have shown that large quantities of hemoglobin may be excreted by the kidney without impairment of renal function, provided the urine is not as acid as pH 6 or lower. Acid urines induce crystallization of hemoglobin and acid hematin in the tubules, precipitating renal failure; alkaline urines promote solubility of hemoglobin over a wide range. Therapeutic indications derived from the above observations include use of multiple transfusions to combat anemia, administration of adequate fluids to permit copious urine forma-

tion, and alkalinizing measures to preclude onset of uremia following precipitation of blood pigment in the renal tubules produced by acid urine.

Less frequent but more serious toxic effects of plasmochin on the circulatory system include reduction of blood pressure by direct action on the heart, cardiac irregularities, electrocardiographic alterations, and diastolic standstill.[11]

SUMMARY

A case of plasmochin intoxication, induced by accidental administration of ten times the therapeutic dose, is reported. Clinical recovery followed supportive therapy. The pathologic physiology and treatment are discussed.

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SULFAMERAZINE IN THE TREATMENT OF GENITO-URINARY INFECTIONS

AN ANALYSIS OF 151 CONSECUTIVE CASES

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The purpose of this report is to present the results of treatment in 151 cases of genito-urinary infections with sulfamerazine. An attempt has been made to evaluate the efficiency of the drug, and whenever other sulfonamides have been used in the same cases, a comparative study of their efficacy and relative toxicity has been made.

The chemistry of sulfamerazine [2-sulfanilamido - 4 - methyl - pyrimidine; sulfamethyldiazine)] has been described by Roblin and his co-workers[1] and by Sprague and his associates[2]. It is a white crystalline powder, poorly soluble in water and the common organic salts, but readily soluble in dilute acids and alkalis, and may be converted into its sodium salt, which is soluble in water. It has attracted interest because it is more soluble than other pyrimidine derivatives, and because it is thought to be more rapidly and completely absorbed from the gastrointestinal tract and more slowly excreted than other sulfonamides. Welch and his co-workers[3] found that sulfamerazine and its acetyl derivatives were approximately 20 per cent more soluble in both water and urine than the respective forms of sulfadiazine. Studies by Welch and his associates[3], Goodwin and his co-workers[4], Murphy et al.[5], and Clark et al.[6], demonstrated that sulfamerazine was more rapidly absorbed from the gastrointestinal tract and more slowly excreted in the urine than sulfadiazine. They showed that a single dose of sulfamerazine would bring about a higher blood level more rapidly and longer sustained than the same

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amount of sulfadiazine. Renal parenchymal injuries and the formation of drug concretions in the urinary tract were thought to be less likely to occur with sulfamerazine than with sulfadiazine, because of the increased solubility of both the free and conjugated forms of sulfamerazine in acid and neutral urine. It has been demonstrated that adjuvant alkali therapy aids in the prevention of renal complications due to the sulfonamides by raising the pH of the urine.[7]

Animal experiments indicate that the toxic effects of sulfamerazine are no greater than those following the use of sulfadiazine. Among the clinical reports in the literature concerning the use of sulfamerazine, we have been unable to find any report of fatalities. Hall and Spink[8] had two non-fatal cases of urinary tract complications resulting from crystalline precipitation and obstruction to the flow of urine. Gefter and his co-workers[9] encountered six cases of dermatitis in 45 patients treated with sulfamerazine, and Clark and associates[6] reported mild cases of dermatitis in 3 per cent of his cases.

With regard to the efficiency of sulfamerazine in the genito-urinary tract, several small series have so far been reported. Anderson and associates[10], in a large series of cases, treated 10 patients with *E. coli* infections of the urinary tract with sulfamerazine. Four of these had acute pyelonephritis and all became asymptomatic rapidly following use of the drug. Three out of four cases with acute cystitis recovered promptly. Hall and Spink[8], treating 116 cases with sulfamerazine, used the drug twice in urinary tract infections due to hemolytic streptococci, and reported that both patients became free of infection. Hageman and his co-workers,[11] in a series of 103 cases, treated four patients with *E. coli* infection in the urine with satisfactory results.

In our series of 151 patients treated with sulfamerazine there were 137 cases of urinary infection, seven of gonorrheal urethritis and seven of non-specific urethritis. Of the 137 cases with urinary infection, 88 were regarded as primary, uncomplicated cases and 49 as secondary to some complicating factor precluding the possibility of radical cure. The dosage averaged 30 grains daily for ten days, the minimum being 15 grains daily for two days and the maximum 60 grains daily for thirty days. It may be noted here that in the 10 patients receiving 60 grains a day for thirty days there was no difference either in the effectiveness of the drug or in the incidence of reactions. The complicated cases of urinary infection could not be cured because of some mechanical complicating factor and were, therefore, not considered. In the 88 uncomplicated cases of urinary infection treated, the organisms encountered were bacilli alone in 47, staphylococci in 18, streptococci in three and mixed infection in 18. There were two cases involving the Proteus bacillus.

The determination of a cure in the uncomplicated cases has been evaluated on the basis of three negative stained smears of the urinary sediment at weekly intervals following withdrawal of the drug. The average time required to bring about a sterile urine in the successfully treated cases was 5.5 days and the average time that the patient was required to take the drug was 6.6 days. Of the 47 bacillary cases, 40 patients were cured (85 per cent) and seven (15 per cent) were classified as failures. In the 18 staphylococcic cases, 16 were cured (89 per cent) and in two (11 per cent) the drug had no effect. Of the 18 patients with mixed infections, 11 (61 per cent) were cured and seven (39 per cent) were failures. The two cases of Proteus bacillus infection were not affected by the drug. Only two of the seven patients with gonorrheal urethritis were cured; of the five failures, four were later promptly cured by the use of sulfathiazole in similar dosage. Of the seven non-specific cases of urethritis, two were cured and five were considered as failures.

Among the cases of urinary infections successfully treated with sulfamerazine were six who had previously failed to be cured with sulfadiazine; 10 who failed with

sulfathiazole; 11 who failed with mandelic acid; three with the arsenicals; four with prohydrion, and two with sulamid. One bacillary case had been unsuccessfully treated with sulfadiazine, sulfathiazole, prohydrion and mandelic acid, and yet cleared completely on sulfamerazine.

Of our total of 151 cases, pronounced reactions were encountered in six cases (4 per cent) and slight reactions in five (3 per cent). Ten patients complained of nervousness, nine of nausea, three of fever, one of vomiting, one of dizziness, one of headache, one of microscopic hematuria, one of edema of the legs and one of numbness of the legs. There appeared to be no relationship between the total dosage received and the incidence or severity of the reactions encountered, although one patient who took 60 grains a day for four days had multiple reactions which disappeared when the dose was reduced to 15 grains. Of those patients who had experienced disagreeable reactions from other sulfa drugs, and who were then given sulfamerazine without experiencing further reactions, there were three with microscopic hematuria, one with renal colic and one with a skin rash from sulfathiazole; one with microscopic hematuria and renal colic, and one with paresthesia and mental confusion from sulfadiazine.

CONCLUSIONS

From the above report it may be seen that sulfamerazine is useful in the treatment of genito-urinary infections in several respects. It is efficient in relatively small doses and exerts its influence within a reasonably short time. It apparently shows no higher incidence of reactions than the other sulfonamides in comparable doses. It may frequently be given to patients who have reacted badly to one of the other sulfonamides with no further reaction, and it will often eliminate infections in patients who did not respond to the various other urinary antiseptics, including the other sulfonamides. It is not efficient in gonorrhea and no more efficient in the non-specific genital infections than the other sulfonamides.

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POSTOPERATIVE EVISCERATION*

PART I: A COMPARATIVE STUDY

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The belief that wound evisceration was an act of God might well have existed until 1905, when Madelung attempted to evaluate 157 cases, thirteen of which he had personally observed. Then there followed many theories and scientific studies which delved into the causes of evisceration.

The aim of this study is to compare the progress of evisceration in the past decade with its progress in the preceding decade; to ascertain whether there have been any changes in the occurrence of the disease; to determine the role of non-absorbable suture material in evisceration; to evaluate many of the so-called predisposing factors; and to find a means of early diagnosis prior to the day of evisceration or at the time of removal of skin sutures.

*Read before the Orleans Parish Medical Society, April 9, 1945.

This is a comparison of the cases of evisceration occurring between 1934 and 1944 with those occurring between 1924 and 1934 at Charity Hospital in New Orleans.

The causes of evisceration, in so far as they are known, may be divided into two groups, those which can be attributed to the patient, and those for which the surgeon can be held accountable. The former usually include sex, age, respiratory infection, stress and strain, contamination, nutrition with special emphasis on vitamin C, and the healing power of the individual. On the other hand, the surgeon's influence on wound healing can be reflected in the following: site of the incision, tissue care, choice of suture material, knots, choice of anesthesia, use of a drain, and pre- and postoperative care. Each of these causes and topics will be considered individually.

From a study of the cases reported in the literature 119 were males and 92 were females. These findings bear out the general opinion that sex is not an important factor. However, Colp believes that males are affected more often because of their type of breathing and labor.

In considering age as related to wound healing, it is difficult to obtain any significant statistics, because evisceration presupposes an operation and operative risk often rules out the very old. Since hospital admissions average between 30 and 50 years of age, evisceration as a complication follows those same figures. Within the age groups this catastrophy runs proportionately as frequent among all groups. In general, it might be noted here that evisceration complicates 0.03 per cent of all operations according to American reporters, and 2 per cent to 3 per cent as reported by Sokolov from European clinics.

Infection of the upper respiratory tract has been shown to contribute toward evisceration by causing the patient to cough, by delaying the ingestion of food, which in turn diminishes the mineral and vitamin intake. Infection has been shown to delay fibroblastic proliferation. Before an individual is operated upon an earnest search should be made for the possible existence of any infection of the respiratory tract. If such evidence is found the infection should be dealt with prior to operation, for anesthesia aggravates existing respiratory infections and often causes such an infection when it did not previously exist.

Stress and strain, such as hiccough, cough, sneezing, cause a constant tearing at the site of the incision. This is particularly detrimental to longitudinal incisions. Ileus, whether dynamic or adynamic, causes a straining of the suture line and should be treated at once. Early activity in the past was stated as a cause of disruption. Pickrell believes that during the lag period, which has been demonstrated to exist for about four days, the patient should be kept quiet, and support applied to the abdomen so as to keep the wound edges coaptated. However, in general, this theory has fallen into discredit, witness the now plentiful literature on early mobilization after surgery, by Nelson, Zana, D'Ingianni, and others. Indeed, the advocates of early ambulation claim that it promotes rather than delays wound healing. An inspection of table 1 certainly does not reveal vomiting, cough, and hiccough as important factors in producing evisceration.

As for contamination, all non-viable tissue must be removed by debridement, for removal by leukocytes is slow, and it must be removed before the fibroblasts proliferate. When chromic sutures are used there are multiple abscesses formed. To begin with, sterilization of chromic is far from satisfactory. Add to this the fact that organisms settle out of the air during the procedure, and the stage is all set for infection. When infection is present the greater leukocytic infiltration causes rapid disintegration of the suture material.

Pus increases the amount of edema, and edema diminishes the blood supply by obstructing the blood vessels, thus interfering with healing. Syphilis is thought to be another delayer of healing, yet the number of cases of evisceration with syphilis is not significant.

DuMortier has shown that the resistance to infection of an incision is lowest during

the first six hours; that thereafter it becomes progressively more difficult to infect a wound, and that after the fourth day it is impossible to do so. This period corresponds to the lag period seen in the study of wound healing.

Nutrition is an important factor in wound healing in those cases wherein there is an inability to ingest or digest a balanced diet, or when vomiting has occurred sufficiently long to dehydrate the patient and deplete the body of chlorides. Dehydration as well as edema due to hypoproteinemia or overloading of the body with sodium ions impairs healing. Proliferation of the fibroblasts is apparently influenced by the presence of fluid in tissue spaces. Edema diminishes the nutrition and oxygenation of the cell, thus devitalizing it. Edema as seen in beriberi and pellagra is of course due to vitamin deficiency and again delays healing.

Harvey and Howes have shown that high protein diet accelerates fibroblastic phenomena, and the hypoproteinemia does not prolong the lag period. Clark contends, as a result of animal experiments, that the lag period can be influenced by protein diet.

Vitamin C has been given a great deal of study in its relation to healing. Its deficiency may be caused by improper diet or by an inability to handle ingested foods as in cases of peptic ulcer and tumors of the gastrointestinal tract. Lannan and Ingall have done work in this field. Taffel and Harvey demonstrated in animals that deficiency in this vitamin caused decreased tensile strength of the wounds. Another reporter, Faulkner, noted a lack of mucous material in the absence of vitamin C. This mucous material seals over the serosa and peritoneum. When it is lacking, a leaking of the anastamoses might be encountered.

Vitamin K is necessary to control bleeding, to prevent hematoma, and great separation of tissue. When excessive bleeding does occur extra time is needed to clear away that extra amount of blood before complete healing takes place, and the extra blood acts as an additional medium for organism growth.

The healing power of the individual, his health in general, whether he is properly nourished, whether his protein and vitamin intake are sufficient, whether his water balance is maintained, how he reacts to the various types of suture materials, all these enter into a discussion of wound healing.

The surgeon's influence on wound healing is the other side of the picture. The site of the incision has undergone much discussion as a factor in disruption; many stating that evisceration occurs more frequently in upper abdominal surgery than in lower abdominal surgery. However, in scanning large numbers of cases it results that evisceration is not related to the site of the incision.

The amount of necrosed tissue has direct bearing upon wound healing, hence tissue care becomes an important part of the surgeon's responsibility. He must be cautious to prevent mass ligation of vessels and the incorporation of large amounts of tissue into the suture.

Choice of suture material, whether absorbable or non-absorbable, must be made for each particular phase of surgery. The size of the suture must be considered, for a large suture requires a large needle, which in turn determines that a large hole is made, needing a great number of collogen fibrils and fibroblasts to fill it. The tensile strength of the various suture material must be known, so as to avoid selecting a material of much greater strength than the tissue it is to hold together. Whether sutures are to be continuous or interrupted is left to the judgment of the surgeon. Much has been said in favor of the interrupted type; however, cases of evisceration have been reported when interrupted sutures were used in cotton and silk.

In the tying of knots it is to be remembered that tissue must grow together, that sutures must not be drawn too tensely, and knots should not be tied so tightly as to cause necrosis and sloughing of the tissue in the loop, thus voiding the effectiveness. Knots improperly tied will slip. Taylor showed that wet chromic, no matter how it

is tied, makes a poor knot, and that neither a true not a false knot is trustworthy. The most reliable knot is a triple throw each in a different direction.

The anesthetic is important in the postoperative course as well as in wound healing, for if the patient is kept anesthetized until the fascia is closed, the closing is greatly facilitated. On the other hand, if the patient is permitted to take long breaths and attempts to vomit there is added difficulty in closing the abdomen; and there is also the possibility of tearing out of the suture and a resulting bad closure. The use of carbon dioxide toward the end of surgery often causes the patient to take forceful breaths. Koster and Kasman believe that spinal anesthesia affords better relaxation and ease of closure. Pulmonary infection resulting from anesthesia often lowers body resistance and as a consequence tends to diminish the healing power of the patient. In this indirect manner also anesthesia is related to wound healing.

Drains have been blamed for many cases of evisceration. However, Maes and Boyce have shown that drains are not to be blamed entirely, because there have been as many cases of evisceration when a drain was used as there have been when a drain was not used. Pickrell, with American statistics, stated that one-third of the cases of evisceration had been drained, and Madelung found that one-sixth of the European cases had been drained. Colp found that evisceration occurred in 1.222 per cent of the cases drained and in 0.84 per cent of the cases not drained. As for the cases at Charity Hospital, a drain was used in six cases in the later study and in twelve cases in the earlier study. However, there are many factors to be considered before stating that the drain is responsible for the evisceration. The wound should be examined to determine the presence of infection, to note if improper closure was made, and if a hole was left along the wound edges. In the light of the possibilities of evisceration it might be suggested that a stab wound should be used for the drain wholly apart from the original wound so as to prevent complications.

Preoperative and postoperative care on the part of the surgeon include the stabilization of nutrition, the building up of the serum protein by blood transfusion, the maintenance of water balance both in preparation for operation as well as postoperatively for healing. Suspicion of the early diagnosis of evisceration is important. The patient whose temperature suddenly rises after having been normal, or the patient whose temperature elevation persists with an appearance of sero-purulent discharge on the dressing, should arouse the suspicion of non-coaptation of the wound edges. Once such a suspicion is maintained it would be better to remove the sutures under sterile conditions in the operating room, and gently probe the skin to determine the presence of evisceration. If such a condition is encountered it can be handled under sterile conditions and the possibility of peritonitis avoided. Eviscerations are usually diagnosed after the gut or the omentum has extruded for some time and given a chance to go through temperature changes and become contaminated. Those patients in whom there is clinical evidence of obstruction or partial obstruction suggest evisceration since a loop of gut may have herniated into the wound and become incarcerated.

In 1934 Maes and Boyce made a survey of evisceration during the preceding ten years. Upon their comprehensive study is based this comparative study. They surveyed 44 cases, which are herein compared with 51 cases that occurred in the next decade. Their early writings pointed out that the percentage of evisceration was high due to the different kinds of surgical gut that were being tried. Indeed, one surgeon had seven cases and another had five cases, accounting for 27.2 per cent of the cases in the early study. Among the cases in the next decade, seven surgeons accounted for 16 cases of 51.6 per cent. There were 27 surgeons who had cases that eviscerated in the early study and 31 in the later group. The yearly distribution can

be ascertained by a glance at table 4. The only significant fact in the early report is that during three of the years there was not one case of evisceration.

TABLE 4
NUMBER OF CASES ACCORDING TO YEARS

1934	1	1924	5
1935	2	1925	0
1936	10	1926	2
1937	3	1927	7
1938	5	1928	1
1939	4	1929	1
1940	4	1930	0
1941	7	1931	0
1942	7	1932	5
1943	8	1933	13
Total	51	Total	44

Race distribution was apparently equal. As for sex, in both studies the females predominated in the negro race, and the males among the white. The relatively small numbers studied is not a fair test of distribution as to sex, and in large numbers of cases the distribution equalizes itself. The age distribution is recorded in table 3.

TABLE 5

	1934 to 1944	1924 to 1934
Urgent surgery	15 4 died or 26%	15 11 died or 73.3%
Elective surgery	36 12 died or 33%	18 1 died or 5.5%
Appendectomies	5 or 9.8%	19 or 43.2%
Fibroids	10 or 19.6%	9 or 18.1%

Maes and Boyce point out that 63.8 per cent of the cases occurred between 20 and forty years of age, which is contrary to many other reports. The later study found 43.1 per cent during that age group, but 59 per cent in the 3 to 50 years group. However evisceration occurred in all age groups, some during the first months of life who were operated upon for intestinal obstruction.

From a survey of the patients' admission notes, laboratory findings, and x-ray plates, the relative risk was determined, being divided into good, fair, and poor. Table 7 presents a detailed listing of the etiology of the primary pathology. There were 19 cases placed in the group considered good risk. Of these three died. In the corresponding group in the earlier study there were 26 cases of which two died. Under "fair risk" there were 16 cases of which four died in the later report, as against eight cases of

TABLE 7
PREOPERATIVE RISK

Operation	No. of cases	No. of deaths
A. Good Risk		
Uterine fibroid	9	1
Chronic appendicitis	4	
Ovarian cyst	1	
Intestinal obstruction	2	1
Caesarian section	1	
Chronic cholecystitis	1	
Exploratory	1	1
TOTAL	19	3
(In the early study under "good risk" there were 26 cases of which 2 died.)		
B. Fair Risk		
Cholelithiasis	4	
Pistol shot	2	1
Intestinal obstruction	2	1
Acute pelvic inflammatory disease	1	
Uterine fibroid	1	
Rupture urinary bladder	1	1
Exploratory laparotomy	1	
Urethral stone	1	1
Splenectomy	1	
Gastric ulcer	1	
Prostatic hypertrophy	1	
TOTAL	16	4
(In the early study under "fair risk" there were 8 cases of which 4 died.)		
C. Poor Risk		
1. Carcinoma of		
Stomach	7	4
Pancreas	1	1
Cecum	1	
Esophagus	1	1
Ileum	1	
2. Rupture of		
Gallbladder	1	
Appendix	1	
Jejunum	1	
Stomach	1	
3. Pelvic inflammatory disease	1	1
4. Fecal fistula	1	
5. Intestinal obstruction	1	
TOTAL	18	7
(In the early study under "poor risk" there were 10 cases of which 7 died.)		

which four died in the report by Maes and Boyce. In the "poor risk" group were placed 18 cases, of which seven died in the later study, as compared with ten cases of which seven died in the earlier report. The group distribution cannot be considered strictly accurate since the criteria for placement in the different groups were not constant for both studies. The relative rise in mortality rate in those classed under good risk from 7 per cent to 15 per cent in the later group can find support in the fact that the mortality from evisceration in elective surgery jumped from 5.5 per cent to 33 per cent in the later group. In contrast there was a sharp decline in the number of deaths

from evisceration associated with urgent surgery.

Carcinoma occurred in eleven cases of which five died in the later group. In the earlier group there were five cases of carcinoma, but their deaths were not attributed to this disease.

Appendectomies were done in five cases (9.8 per cent) of the later study; whereas there were 19 appendectomies (43.2 per cent) in the earlier study. In the later study only one case of evisceration occurred among those operated upon for a ruptured appendix.

Removal of fibroids accounted for 18.1 per cent in the early groups and 19.6 per cent in the later group.

It has been stated that upper abdominal incisions eviscerated with higher frequency than lower. Maes and Boyce pointed out that 25 per cent of cases occurred in the upper abdomen and 75 per cent followed lower abdominal surgery. In the later study 20 cases (39.2 per cent) occurred in the upper abdomen as against 21 (41.1 per cent) following lower abdominal surgery. Three cases occurred through previous scars in the later report as against one in the early group. Maes and Boyce reported one case following a McBurney incision; the later study revealed one case.

Seventy-five per cent of the cases of evisceration in the later study occurred between the fifth and the tenth day, whereas 50 per cent occurred before the seventh day in the early group. There were nine grossly infected wounds at the time of repair of evisceration; in the early report there were 17.

As Maes and Boyce pointed out, in many cases death was not due entirely to evisceration, but to associated pathology. Pneumonia accounted for five deaths in the later group and none in the early group; peritonitis accounted for three deaths in the later group and seven in the early group. Carcinoma caused five deaths in the later group and none in the early group. Intestinal obstruction caused one death in each group. Death was attributed to shock in one case in the later and in five cases in the early group.

DISCUSSION

The causes of evisceration have been discussed by many authors and their conclusions vary. Faulty closure of the peritoneum has been advanced as a most plausible cause. However, the statistics herein recorded do not confirm faulty closure any more than they confirm cough, hiccough, vomiting, or early rising, because evisceration even occurred in those cases wherein interrupted sutures were used in closing the abdomen. If faulty closure was the cause of evisceration, would not one suture hold even though the omentum did protrude somewhere? Why should the entire suture line become separated and the wound edges fall apart by the most gentle pressure?

Those who contend that evisceration is an allergic response find it difficult to hurdle many of the statements that have been made against this idea. It is now claimed that chromic is no longer in a state to produce antigenic bodies; that more than 900 c. c. of suture material is needed to sensitize a rabbit; that workers are often unable to obtain the same results when repeating an experiment. Besides these statements there is the ever-present fact that evisceration does occur when suture material is used that is not capable of producing antigenic bodies.

If stress and strain is suggested as a causative factor, it can be said that evisceration should occur during the first few days, since from the fourth day on the pressure needed to disrupt the wound becomes greater. Yet the majority of cases of evisceration occur after the fifth day and the lag period has passed.

Infection cannot be a leading cause since only nine cases were infected among the large group surveyed.

Other reporters mention the existence of large quantities of blood between the wound edges, yet no operator, in exploring a wound, saw the need of clamping the free bleeding points.

It is the conclusion, therefore, of this report that there is as yet no feasible causa-

tive factor for evisceration, and that the particular findings at the time of resuturing do not help clarify the etiology of evisceration.

One may also further conclude that the statistical report of Maes and Boyce covering the years 1924 to 1934 does not differ materially from the report of the next decade.

TABLE 1

Bedside Notes

	1934 to 1944	1924 to 1934
Vomiting	3	7
Cough	3	3
Hiccough	0	3
Sudden motion	0	1
Passing gastric tube	0	1
By inspecting	6	3
Pneumonia	6	1
Bronchitis	4	0
Positive Wassermann	1	0
Drain	6	12
Measles	1	0

TABLE 2

RACE

	1934 to 1944	1924 to 1934
White:	30 or 58.6% M-24 F-6	27 or 61.4%
Colored:	21 or 41.4% M-7 F-14	17 or 38.6% M-5 F-12
Mortality:	16 or 31.3% M-10 F-6	13 or 26.25%

TABLE 3

AGE DISTRIBUTION

Decades	1934 to 1944		1924 to 1934	
1st	4		2	
2nd	2		11	
3rd	8	22 or 43.1%	11	28 or 63.8%
4th	12		6	
5th	10		5	
6th	6		6	
7th	9		2	
8th	0		1	

TABLE 6

	1934 to 1944	1924 to 1934
Upper abdominal incisions that eviscerated	20 cases or 39.2%	11 cases or 25%
Lower abdominal incisions that eviscerated	21 cases or 41.1%	33 cases or 75%
Midline	32	16
McBurney	1	6
Through previous scar	3	1

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DISCUSSION

Dr. Frederick F. Boyce (New Orleans): Since Dr. D'Ingianni's discussion of wound dehiscence at the New Orleans Charity Hospital for the 20 year period ending in 1943 includes a 10 year period upon which I previously reported, I feel that I should comment upon his remarks.

The contradictions evident during the period of my study have apparently continued during the additional period studied by Dr. D'Ingianni. Let me mention a few of them:

It is generally stated that the highest incidence of wound disruption occurs in upper abdominal incisions. In my own study the incidence was much higher in lower abdominal incisions, presumably because of the high incidence of gynecologic operations at Charity Hospital. My series was unique in one respect, I believe, that six disruptions occurred in McBurney incisions, and one occurred after repair of an inguinal hernia. So far as I could determine, the accident had not previously been reported in either of these incisions. No details were given concerning the hernia incision which permitted any conclusions. The McBurney incision seems in each case to have been extended and so modified that the inner part of the internal oblique and the transversalis muscles were divided, and the assumption is that they were inadequately repaired, leaving a potential weakness.

Statements as to the higher incidence of the ac-

cident in males or in females obviously depend upon whether or not gynecologic cases are included in the particular series under discussion. If this factor is not taken into consideration, false conclusions can readily be drawn. In my own series, 12 of the 44 ruptures studied occurred in negro women, eight of whom had been submitted to gynecologic operations.

My impression previous to my analysis that the accident would prove more frequent in emergency than in elective surgery was not borne out by the figures, nor was my impression, which is generally shared, that it would be more frequent in malignant than in benign disease.

At the time of my report, the largest series reported in the literature, and I believe still the largest series on record, consisted of the 712 cases collected by Sokolov, chiefly from European clinics. The largest series reported in the American literature at the time was the approximately 175 cases reported before the New York Surgical Society by Meleney and Howes, Colp, Grace, White and Heyd, as a symposium. It should be noted that these large series consist of collected cases. They do not represent the experience of individual surgons. As a matter of fact, this is not a usual condition. The reported individual series are all small, and the personal experience of individual surgeons is limited. We have no right, therefore, to draw sweeping conclusions or to make dogmatic statements concerning it.

Certainly sweeping statements cannot be made concerning its causation. Sokolov laid much stress upon seasonal incidence, which I still consider of minor importance. His emphasis upon vitamin C deficiency, however, upon which I was not originally inclined to lay much stress, now seems justified. Recent studies have shown that many surgical patients do have a vitamin C deficiency, and it is now the general practice to fortify all such patients by the administration of the vitamin, usually parenterally. I do not know whether any study has been made to determine whether the incidence of wound dehiscence has been greatly decreased by this measure. My own impression is that it has not been. At any rate, vitamin C deficiency is certainly not the sole cause of evisceration.

An interesting consideration is that the accident does not seem universally preventable with any kind of suture material, with the possible exception of silver wire. Drainage is a predisposing cause but obviously not a basic cause. The importance of protein deficiencies is now generally acknowledged.

In the light of present knowledge, the most reasonable conclusion seems to be that the accident is due to many possible causes rather than to a single universally operative cause. I myself still hold the opinion which I expressed in 1934 that wound disruption is peculiarly likely to occur in patients who are poor surgical risks, and that the death rate is likely to be much higher in this group of patients than in any other group.

Dr. Vincente D'Ingianni (In closing): I wish to thank Dr. Boyce for his discussion.

CLINICAL SUGGESTIONS FOR ENDOCRINE DIAGNOSIS AND TREATMENT*

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Endocrinology in its earlier years depended largely on clinical observations, a good history and careful physical examination, for diagnosis and treatment. In an effort probably to meet the criticism as to the validity of diagnoses so made and the efficacy of therapy so controlled, endocrinologists went to the other extreme of relying very largely on the laboratory. Most of these tests are not available to men in private practice and consequently for the time have very little social or economic value no matter what their "scientific" value or interest. The literature of endocrinology is so voluminous that only men interested solely in that subject can keep up with it. Along with these two developments has come a shift away from an ignoring or minimizing of the importance of a careful history and physical examination plus carefully chosen therapeutic tests.

A very small percentage of endocrinopathies are treated by endocrinologists. The vast majority, if treated at all, must be cared for by men in other fields of medicine, particularly by that most valuable of all medical men, the general practitioner. In order to save energy in these strenuous times of doctor shortage the writer has offered a few suggestions that may be found useful until civilian practice again becomes more nearly normal.

THE INTERPRETATION OF THE BASAL METABOLIC RATE

It is generally assumed that the B.M.R. indicates the level of thyroid function, a low B.M.R. signifying hypothyroidism and an elevated B.M.R., hyperthyroidism. Both

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of these assumptions should be taken with a large grain of salt. If a patient is found to have a low B.M.R. but does not exhibit corresponding signs and symptoms of hypothyroidism, it may be safely assumed that the low B.M.R. is due to something other than thyroid deficiency. The low reading may be due to some non-endocrine condition or to pituitary or adrenal deficiency. The signs and symptoms of thyroid deficiency are too well known to need enumeration now. But certain things should be looked for: mental or physical retardation, a gain in weight, slow pulse and sensitiveness to cold. The last point is quite significant. The reaction to temperature may be used in a rough way to help differentiate pituitary and/or adrenal deficiency from hypothyroidism. The victim of the latter is sensitive to cold but enjoys hot weather. The victim of adrenal deficiency is equally sensitive to cold but is also adversely affected by heat. The victim of hypopituitarism is much less sensitive to either heat or cold than is the victim of either of the other two conditions.

A therapeutic test will help to clarify the situation. The administration of thyroid in doses of two grains per day to an adult will within a week bring about some improvement in the victim of hypothyroidism, whereas the same dose of thyroid will make the patient with hypoadrenia more miserable. It will cause nervousness, tachycardia and perhaps heart consciousness. It will at the same time aggravate most of his other symptoms. The injection of 0.5 c. c. of anterior pituitary extract is likely to relieve some of the symptoms of hypopituitarism within an hour. All that is needed is to give the patient an injection and then have him or her wait in the reception room for about an hour and then inquire as to how he or she feels and which, if any, of the symptoms have been relieved. Headache, of which these people often complain, will be helped almost as promptly as if the patient had been given morphine. They will often have a sense of well being that they had not experienced for a long time. If either of these things occurs, it is entirely safe to assume that a course of such injections given twice weekly for a month or so will produce considerable improvement.

On the other hand, the fat patient who appears to be a victim of pituitary and thyroid deficiency may have a rapid pulse and an elevated B.M.R. Instead of asking the technician to repeat the test, check the patient again for signs of pituitary and/or thyroid deficiency and then give him a therapeutic test. It is not unusual for patients with pituitary and thyroid deficiency to have a B.M.R. of plus 20 to plus 30 and a pulse of 100 or better and yet be able to tolerate one grain or more of thyroid per day. This will be followed by a reduction in pulse rate, loss of weight and relief of many of the symptoms of which these folks complain.

This curious situation was first called to my attention by the late William Engelbach. He had under his care a very fat woman who had most of the signs and symptoms of pituitary and thyroid deficiency, but she also had a tachycardia and her basal rate was plus 40. The tachycardia and the B.M.R. for a long time frightened him away from giving her thyroid, but he finally decided to disregard these two things and to rely on the clinical observations and so gave her thyroid with the result that her pulse slowed down, she lost weight and was relieved of her symptoms.

Over twenty years I have seen this situation many times. Such persons should be given extracts of the anterior and posterior lobes of the pituitary. Their reaction to these extracts should be tested on different days. The test for the anterior lobe has already been mentioned. To test the patient's tolerance or need for posterior lobe extract, give 5 minims of the obstetrical preparation. If within an hour no nausea, faintness or annoying intestinal cramps occur, such doses can be safely given twice weekly. Anterior and posterior lobe extracts should be given in the same syringe at the same time except that posterior lobe extract should not be given during or within a week before a menstrual period. To do

so will almost invariably cause the following period to be painful. The injections should be continued until the symptoms are relieved and the patient loses a satisfactory amount of weight. Of course adequate dietary restrictions should be imposed.

The point is that in obese persons an elevation of the B.M.R. cannot be accepted without question as signifying hyperthyroidism and the final decision can most safely be made by therapeutic tests.

If one proposes to use pituitary extracts in treatment, he should, if it is convenient, do a glucose tolerance test. If that is not convenient, it is well to check the blood sugar an hour after the injection of these extracts. If there is a marked rise after the injection, they should not be used in treatment. This need not be a fasting blood sugar. If neither of these things can be done conveniently, the urine should be examined for sugar at least every sixty days while these extracts are being given.

ADDISON'S DISEASE

Addison's disease is a very rare disorder. About 25 deaths are reported each year in Illinois. A definite diagnosis is difficult, particularly in the absence of pigmentation. The "water test", while not conclusive, is usually helpful and gives a general idea as to whether Addison's disease may be ruled out or whether the study should be pursued further. The test is conducted as follows:

The day before, the patient eats his usual diet but omits extra salt. After 6 p. m. he has no food or drink. At 10:30 p. m. he voids and discards the urine. Any voided thereafter until and including 7:30 a. m. is collected and measured. At 8:30 a. m. the patient voids and discards the urine. He is then given 9 c. c. of water per pound. This he drinks in the course of 45 minutes. He is asked to void at 9:30, 10:30, 11:30 a. m. and 12:30 p. m. Each of these specimens is measured. The volume of the urine voided during the night is compared with the largest single specimen voided between 8:30 a. m. and 12:30 p. m. If the volume of urine voided during the night is less in amount than the urine voided in any one hour during the morning, the patient is open to the suspicion that he does have Addison's disease and further studies are necessary.

Of course one can always use a therapeutic test, which, while neither scientific nor conclusive, may be helpful in these times. The patient may be given sodium chloride in enteric coated tablets 3 to 6 grams daily with 5 mg. of desoxycorticosterone acetate. If marked improvement occurs quickly, there is at least considerable likelihood that the patient does have Addison's disease and the treatment should be continued until opportunities are available for complete studies either to vindicate or disprove the diagnosis.

HYPERINSULINISM

Hyperinsulinism due to adenoma of the pancreas is an unusual disorder, but spontaneous hypoglycemia, particularly mild forms, is seen rather frequently. The endocrine disorders most often responsible are pituitary and thyroid deficiency. The best procedure for determining whether hypoglycemia is responsible for the patient's symptoms is to do a glucose tolerance test. However, if the physician lacks facilities for doing this or the patient cannot spare the time for it, considerable information may be had simply by asking the patient to note carefully the time when his symptoms occur, then have the next meal postponed for an hour or so beyond that time. Symptoms due to hypoglycemia are likely to be aggravated by this procedure. Or have the patient take a little food an hour before the time when the symptoms usually occur. Their prevention by this maneuver is strong presumptive evidence of hypoglycemia. Or give the patient one grain of thyroid per day and injections of 0.5 c. c. each of anterior and posterior pituitary extract twice a week. This measure will sometimes relieve the symptoms in a short time.

FROEHLICH'S SYNDROME

Fat youngsters with hypogonadism, whether they be called Froehlich's syndrome or by some other name, present the same pattern. They are the victims of hy-

popituitarism and hypothyroidism and all of them yield to the same treatment with one important difference. Those of normal height or more should receive some gonadotropic preparation, such as antuitrin-S, APL or follutein, in doses of 50 to 100 units. These should be given twice or three times weekly. If the child is of less than average height, give some anterior lobe extract containing the growth hormone in doses of 0.5 to 1.0 c. c. The gonadotropic preparations are alleged to hasten closure of the epiphyseal lines. While this danger is probably greatly exaggerated, we should at least give the child the benefit of the doubt and use growth-promoting compounds in those below average height. In some cases it is well to alternate the gonadotropic preparation with the growth-promoting extract, using the latter one week out of the month or two weeks every two months.

They all require thyroid in such doses as can be tolerated without signs of hyperthyroidism. The correct dose can be determined only by checking the child's response to gradually increased doses. Begin with 1/4 to 1/2 grain per day, depending on the age of the child. Increase the dose by 1/4 grain per day once a week. When that dose is reached which causes tremor, tachycardia, nervousness or insomnia, decrease the dose by 25 per cent and continue at that level. It is not necessary to determine the B.M.R. either before beginning or during treatment, which should be continued until normal weight and normal development of the genitalia is reached. Treatment may then be gradually withdrawn.

All of these children require posterior lobe extracts in doses just short of the amount which causes nausea, faintness or annoying intestinal cramps. To determine this point give three minims of obstetrical pituitrin and keep the child in the office or under observation for about an hour. If this dose produces no unpleasant reaction, two days later another dose of five minims can be given. Few children will need more than that. If three or five minims produce cramps or other unpleasant symptoms, smaller doses should be given until one determines the amount that can be given without producing annoying symptoms. This dose should then be given two or three times a week in the same syringe and at the same time as the other extracts.

If injections are given three times a week, this frequency should not be continued for more than 60 days. At the end of that time treatment should be reduced to twice a week for another 60 days. At the end of that time it should be reduced to once every five days, in another 60 days to once a week, and then to once in ten days, and so on. These patients should be kept under observation until they obtain normal stature, normal weight and normal development of the genitalia. Treatment may not need to be continued more than a year, but they should be seen at intervals of two or three months for some years. In some cases there is a tendency for the genitalia to regress or for obesity to recur, and at the first sign of such a recurrence, treatment should be reinstituted.

Thyroid should be started as soon as the diagnosis is made and whole pituitary or anterior lobe may be given, as enteric coated pills in doses of 1 to 5 grains t. i. d., till the child is ten years of age, when the pituitary preparations should be given subcutaneously.

This condition so often follows some childhood infection, particularly measles, mumps, scarlet fever, diphtheria or pneumonia, that after any of these infections every child should be watched for the following signs: rapid gain in weight; cessation or retardation of growth or sexual development; falling off in scholastic work. Should any of these things be observed, the child should be carefully watched for the appearance of the others and treatment instituted at once. School nurses and school doctors should watch every child under their care for the above signs of thyroid or pituitary deficiency and refer such as have them to their own physicians for more detailed study.

The only laboratory work needed is an

occasional—about once in 60 days—examination of the urine. Glycosuria has been observed after treatment with the gonadotropic preparations.

It is often argued that these children will normalize without treatment. Undoubtedly this is often true. In many others it is not. It is my contention that we have no right to subject any child to the hazard of arriving at maturity with the stigmata of obesity and hypogonadism when we have remedies adequate to prevent such a misfortune. Many cases of scarlet fever or pneumonia would recover without treatment, but we take no chances. Why should we in these endocrine disorders?

TREATMENT OF THE MENOPAUSE

There is some unimportant discussion as to the percentage of menopausal women who need treatment. It has been claimed that no woman should be given estrogens until after an excess of androgens had been demonstrated in her urine. This idea is erroneous. Every woman who consults a physician regarding the menopause needs treatment. In many this needs to be only instruction or advice. The physician can usually decide when this is true by listening to the woman's complaints. If estrogens are needed, begin with small doses, usually 2,000 I. U., twice a week. If after three or four weeks symptoms are not controlled, the doses may be increased to 3,000 I.U. and later, if needed, to 10,000 I.U. Most women are kept quite comfortable on the smaller doses. Some are made more uncomfortable by the larger doses. In my experience 10,000 I.U. are seldom needed.

Doses of estrogens should be determined individually as to size and frequency for each patient on the basis of clinical relief of symptoms. Select one product; learn exactly how to use it; and stick to it.

Several products (progynon-DH, emmenin, theelol) are effective by mouth. Stilbestrol is now popular, but I am not enthusiastic about it. Premarin (Ayerst) looks promising so far. Octofollin and estinyl are others. Preparations by mouth are seldom sufficient to control menopausal symptoms though they reduce the amount and frequency of injections needed.

Another useful procedure, which will not replace the estrogens but will frequently reduce the dose needed, is small doses of x-rays applied to the pituitary and adrenals (120 KV, 3 ma.; 50 cm. skin target distance, 2 mm. aluminum filter; 10 x 10 cm. portal for each side of the pituitary and 15 x 15 cm. common portal for the adrenals) giving 50 r to each area treated. Give no more frequently than once a month.

SIGNIFICANT POINTS IN THE HISTORY

A women who gains weight rapidly and at the same time experiences a decrease in the frequency or amount of the menstrual flow usually owes her trouble to hypopituitarism. In less than three per cent of the cases this will be due to tumor.

Victims of hypopituitarism and hypothyroidism often experience diurnal somnolence and are wakeful at night.

Obese women who owe at least part of their trouble to hypopituitarism often give the following history: At birth they weighed less than seven pounds. Development was normal. They were rather less than average weight until after some infection, puberty, marriage, or pregnancy. The accumulation of weight was steady and rather rapid. They were unable to nurse their babies or could do so but a short time. With each succeeding pregnancy they gained more weight and had less milk.

Female victims of hypopituitarism often have a headache three to seven days before or two days after the menstrual period. Often they experience premenstrual chilliness and a craving for sweets.

Victims of hypopituitarism and hypothyroidism are often slow in overcoming nocturnal enuresis. After the habit is controlled, it may recur at the age of 8 to 12 years.

The value of a good history may be illustrated by one case history:

A 25 year old nurse came under observation November 4, 1937. She complained that for the preceding 18 months she had had a feeling of tightness about her head

and vomited when she was nervous. She frequently fainted after exertion. Four times a year she had a migrainous headache three days before her menstrual periods. She had frequent attacks of urticaria (allergic manifestations are common in pituitary deficiency); had gained ten pounds in the week before I saw her (such a rapid gain is usually due to hypopituitarism); and was emotional, tearful, and introspective, as victims of ovarian insufficiency often are.

Her first menstrual period, at the age of 12, lasted three weeks, a further sign of hypopituitarism. At the age of 22 she had typhoid and her appendix was removed—events which tend to damage the pituitary. Afterward her periods occurred at three to five week intervals and the flow was scant, another indication of pituitary and ovarian insufficiency. She had had mumps, measles and scarlet fever, all of which tend to damage the pituitary. Mumps often attack the ovaries directly though nothing in the history indicated that this had happened to her.

Her height was 5 feet, 6 inches, indicating an abundance of the growth hormone during her early years (not infrequently such women have some deficiency of the pituitary sex hormone). Her weight was 156 1/2 pounds. Her B.M.R. ranged from minus 5 to 25 per cent (in the absence of physical signs of hypothyroidism such a low reading is often due to hypopituitarism). Her obesity, too, was of the pituitary type. The pubic hair was of the male type and there was some hair about the nipples.

She had been told that her trouble was largely mental and advised to think less about herself and more about her work, which was very exacting and sometimes exciting.

On the basis of the history of premenstrual migrainous headaches, a menorrhagic first period, scanty and irregular periods after typhoid and appendectomy, emotional and gastrointestinal upsets, the rapid gain in weight, and the physical findings of the height, pituitary type of obesity and lack of other significant findings, a diagnosis was made of pituitary and ovarian insufficiency.

Treatment consisted of anterior pituitary extract (not antuitrin-S) 0.5 c. c. twice weekly, with ovarian residue 1 c. c. given in the same syringe at the same time, and ovarian concentrate (Armour) one capsule three times a day by mouth. Her symptoms rapidly decreased in severity and shortly disappeared completely.

SUMMARY

The foregoing suggestions are offered only in the hope that they may in some cases save time and energy for some overworked physician.

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A CASE REPORT OF RECTO-VESICO-VAGINAL FISTULAE*

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NEW ORLEANS

M. F., a white, married, nulliparous female, 30 years of age, was first seen by me in April, 1944, complaining of incontinence of urine of one month's duration.

Past History: Patient discovered that she had a positive Wassermann in 1940 and has taken treatment intermittantly ever since. She was intolerant to arsenic and Wassermann has never been negative.

Present Illness: In April 1944, three months before I first saw her, she consulted Dr. S. J. Rosenthal because of long standing vaginal discharge, for which she had been treated for some time without results. On February 1, 1944, she had a D. & C., biopsy of cervix and application of radium.

Operative Procedure: A small piece of tissue was removed from the cervix uteri for diagnostic purposes. The cervix was dilated and 60 mgm. of radium inserted into the cervix; 30 mgm. were distributed about the cervix. Three wet packs were put in vaginally.

Biopsy Report: Acute and chronic inflammatory cystic cervicitis; one area shows early adenocarcinoma.

Approximately two weeks later she noticed a foul watery discharge. This watery discharge increased during the next three weeks, during which time the patient voided very little urine. On March 6, 1944 five weeks after application of radium, she had an abdominal total hysterectomy. No difficulty was encountered; there was no evi-

*Read before the Orleans Parish Medical Society, February 12, 1945.

dence of injury to bladder or bowel. The significant pathologic findings were:

"About 3½ cm. down the endometrial cavity from the fundus of the uterus about in the position of the lower uterine segment, there appears a yellow, creamy, light greenish necrotic-like area, which presents a foul odor. This necrotic tissue appears to have eroded into the myometrium. It extends downward into the cervix, which has been detached from this portion of the fundus. The vaginal portion of the cervix presents a circumscribed, eroded area, measuring approximately 1½ cm. in diameter. The endometrial lining of the cervix is continuous with the necrotic, greenish pathological area described in the lower uterine section. The lateral margin of this necrotic area in the lower uterine segment appears to be indurated and firm in consistency."

Following this operation, all of the urine drained through the vagina. On getting out of bed on the fourteenth postoperative day, the patient noticed some feces in the drainage.

On my first examination, bivalve inspection of the vagina revealed vagina to be shallow. Granulation tissue covered the vaginal vault, which was so contracted that speculum could be only partially opened. There was an opening at the top of the vagina anteriorly and urine could be seen to run out. There were a few particles of feces in the vagina also. Digital examination of the rectum revealed an opening anteriorly 2 cm. in diameter.

Cystoscopy: Urethra negative. It was impossible to distend the bladder as the fluid flowed out readily through a fistula above the trigone and just to the left of the mid-line. Complete inspection of bladder was impossible. Both ureters were open and urine from each kidney was negative.

On May 30, 1944, laparotomy was done by Dr. Rosenthal, at which I assisted. After exposing the lower sigmoid and rectum, we found the rectum densely adherent to the bladder. In separating the bladder from the rectum, a fistula connecting the two was opened. There were then two openings in the bowel on its anterior surface; one about 2 cm. in diameter and the other about 3 x 4 cm. There was also an opening into the vagina and an opening in the posterior wall of the bladder near the dome, approximately 2 cm. in diameter. The bowel was closed first using No. 1 chromic interrupted in two layers of sutures. The opening in the bladder was then closed using No. 1 chromic continuous, reinforced by a second row of interrupted sutures of the same material. No attempt to free the vaginal fascia from the bladder was made, as it was very densely adherent and apparently did not interfere with the mobility of the bladder wall. This I am sure, was a mistake. The vaginal vault was not closed and a cigarette drain was brought out through the vagina; 10 mgm. of sulfanilamide crystals were left in the abdomen and indwelling catheter was placed in the bladder.

The postoperative course was uneventful. Full liquids and a soft diet were allowed on the third day; purgative on the sixth day. Indwelling catheter was left in for twelve days. Patient noticed a recurrence of urinary leakage on the eighth postoperative day and fecal leakage about the fifteenth day. The only difference the patient noticed following this operation was that there was much less fecal leakage.

On November 27, 1944, a suprapubic approach was made in an attempt to close the fistula according to the technic of Hugh Young. The bladder was found to have a good capacity and was normal in appearance except for the region of the sinus. There, it was funneled out toward the sinus, which was 2½ cm. in diameter, connecting directly with the rectum. A No. 6 catheter was passed up each ureter. This reduced chances of injury to the ureters and kept the urine out of the operative field. An incision was made around the circumference of the sinus about 2 mm. from its edge, and the lining of the tract dissected away. Following this the bowel was freed for approximately 1½ cm. around the entire circumference of the fistulous tract. This only partially corrected the distorted contour of the bladder. The vaginal discharge has gradually decreased in amount. At present it is barely perceptible.

Suprapubic catheter was left in for one month, after which it was removed and an indwelling urethral catheter was put in until the suprapubic sinus healed. Since that time there has been no urinary leakage. Cystoscopy showed the fistula was healed. Suture line was preceptable. Examination revealed slight fecal leakage through the vagina after taking purgative on the eleventh postoperative day. This has continued since but fascia was then dissected away from the bladder wall for a distance of 2½ cm. This completely corrected the funneling of the bladder and allowed ample relaxation of the bladder wall for closure without tension on the suture line. Chromic No. 00 interrupted sutures were used to close all three planes; the bowel was closed in the vertical plane, whereas the vaginal fascia and the bladder wall were closed in the horizontal plane. The rectal tissue was markedly indurated, which should have suggested to me the advisability of resecting the indurated edges of the sinus before closing the rectum. A large pezzer catheter was left in the bladder suprapubically, 5 gms. sulfanilamide crystals left in the wound. The patient was given penicillin 10,000 units, intramuscularly, every three hours until 1,500,000 units were given. Bowels were not allowed to move until the eleventh postoperative day.

COMMENT

The different technics that are employed in the closure of vesico-vaginal and recto-vesico-vaginal fistulae indicate the diffi-

culty in successfully handling these types of cases. There is no one approach that is suitable in every instance.

In this case, the vaginal approach did not seem advisable because of the condition of the tissue in the vault of the vagina. The abdominal approach had already been tried and had failed. This left the trans-vesical approach as the most logical procedure.

I feel that the success obtained here was due first, to the complete mobility of the bladder wall in the involved area, so that the bladder wound could be closed without any tension whatever on the sutures; second, the prolonged suprapubic drainage and third, to the use of penicillin, which probably reduced the amount of infection in the region of the bladder wound.

A wider excision of the fistulous tract in the rectal wall would probably have resulted in a complete closure of the rectal fistula at the same time.

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SUBSTANDARD WAGES AND HEALTH

The receipt from Senator Pepper of several reprints from the proceedings and debates of the 79th Congress give occasion for serious thought. The Senator from Florida in one of the reprints discussed a report of a Sub-Committee on Education and Labor. Senator Pepper maintains that a basic wage should be a minimum of sixty-five cents an hour. We are not prepared to discuss the merits or demerits of this proposal, but we do want to point out that Senator Pepper contends, as have the majority of physicians in opposing socialized medicine, that poor health is due more to poverty than any other one factor. The Senator shows that probably because of substandard living conditions the selective service rejection rate was highest in the lowest income group. It is the belief of the medical profession, that if extreme poverty could be eliminated, that there would be then very little need for so-called socialized medicine in which the medical profession would be regimented and in which the profession would be under the control of a group of centralized bureaucrats in Washington who are not familiar with medical practice, medical ethics, or with the medical man. The whole thing would undoubtedly make an awful botch of the care of the sick.

The one criticism that we would make of Senator Pepper's proposal of a high minimum wage, the lack of which he says has meant ill health, is that it is in this particular group of really poor individuals that free medical care has been available in state, county, and municipal hospitals throughout the country, and that it is this group which is if anything suffering least from inadequate medical attention. It is the people at a little higher income level who, it is claimed by the proponents of socialized medicine, need governmental help and assistance to finance catastrophic illnesses, even ordinary plain illnesses. If there was a minimum hourly wage of sixty-five cents for labor throughout the country real poverty would be abolished and everybody's income would probably be increased. The abolition of poverty, by governmental edict or by any other method, however, is a Utopia which seems far distant in view of the enormous national debt that will exist after the war; but did it come about that the truly poor were no longer with us, inadequate housing, lack of proper nourishment and other factors more responsible for ill health than lack of medical care, would be done away with, and with their disappearance would go the demand for a nation wide medical service act by a small group of people who place the onus of ill-

health on the doctor and not where it belongs, on poverty and its results.

SENATE BILL 1176

It would seem that the editorial section of this month's Journal is devoted largely to the opinions and ideas of Senator Pepper of Florida. In extenuation it may be stated that Senator Pepper has shown a great deal of interest in health measures appearing before Congress, and has some excellent ideas with which we agree; but on the other hand he has some ideas with which the medical profession undoubtedly is in discord.

Arguments in favor of an amendment to Senate Bill 1176, increasing the monetary dependence benefits to veterans to obtain an education, are advanced by the Floridian Senator largely from the health aspect. It is pointed out by him that an increase in the monies paid under the GI Bill of Rights would make medical or dental education available to many who would not be able to afford it. It would enable many medical veterans to take advantage of the educational benefits of the GI Bill of Rights because under the terms of the present bill no one can obtain more than one year of medical education under governmental expense unless they can prove that their education was interrupted and that they are under twenty-five years of age. Certainly most doctors would not be able to get further training of any moment under these provisions, unless the monetary benefits are increased. Most doctors in the service are married, are over thirty and have dependents, so that it is obviously impossible for them to maintain a family with the $900 a year now provided for.

Senator Pepper points out that the great majority of doctors in the armed forces want further training after their discharge. Over twenty-eight per cent of the men who replied to the questionnaire sent out by Lieutenant Colonel Lueth have indicated they want training of two years or more. A maximum number of medical veterans should be given the oppotrunity of extensive postgraduate medical training because they have been in jobs completely different from their civilian practice. Senator Pepper says that many of these practitioners have lost contact with the main stream of modern, scientific medicine, and should have an opportunity for liberal postgraduate medical training.

Some of the Senator's remarks have been paraphrased. Two paragraphs will be quoted verbatim to close the editorial:

"The acute civilian need for doctors should not dictate the restrictions of postgraduate medical training courses. It might be said that the civilian need for doctors and other medical personnel is so great that we should not divert any into postgraduate medical courses. It would be very shortsighted, however, to say this. The ultimate good obtained from the training courses will greatly outweigh the temporary continued loss of these men to the civilian population.

"In addition, it should be remembered that most post-graduate medical training such as hospital internships, residencies, fellowships, clinical refresher courses, and the like, all involve examination and treatment of patients, so the personnel is not really lost to the civilian population."

LOW BLOOD PRESSURE

Hypotension has never received the attention devoted to hypertension. The reasons are obvious, but nevertheless low blood blood pressure is an important medical problem. A recent paper by Hamilton* seems worthy of a brief discussion, dealing as it does with some of the various aspects of low blood pressure.

In the first place, it is pointed out that systolic hypotension was at one time considered to be present when the blood pressure was lower than 100 mm. of mercury. Gradually this conception has changed so that nowadays the lower limit of systolic blood pressure is conceded to begin at 90 mm. Likewise, the old conception that blood pressure increased with age can no longer be substantiated as in individuals

*Hamilton, J. G. M.: Low blood pressure, Edinburgh M. J., 52:166, 1945.

without arterial disease the blood pressure does not gradually increase as age advances. Low blood pressure is an excellent and fortunate thing for the individual to have, because life insurance statistics definitely show that the mortality rate in persons with blood pressure of over 140 is much higher than those in the lower pressure group. There is a definite relationship; the lower the pressure the lower the mortality rate, so that in a group of people between the ages of 16 and 60, whose blood pressure is less than 100 mm., the death rate is only 35 per cent of the expected rate. Furthermore, people with low blood pressure may be assured that they are extremely unlikely ever to become hypertensive.

Hamilton asks the question "Is persistent low blood pressure compatible with good health?" In spite of the concept of many physicians that low blood pressure is associated with numerous and many unimportant complaints, statistics show that many athletes have very low blood pressure, and in this war it has been noted that some of the finest physical specimens admitted to the RAF as pilots had low pressures. From innumerable other observations, the author shows that systolic blood pressures ranging between 90-110 mm. are compatible with vigorous health.

At one time hypotension was considered usually to be caused by tuberculosis. Thirty years ago there were dicta which stated that a patient with blood pressure under 110 should be considered to be a candidate for tuberculosis, and if the pressure fell to persistent figures of under 100 that this low pressure was always indicative of pulmonary tuberculosis. Of course these dogmatic statements are erroneous.

To low blood pressure is assigned the production of symptoms such as low-grade physical and mental stamina, dizziness, palpitation, sensitivity to cold, together with many and other miscellaneous and varied complaints. This also is an erroneous idea. In an analysis of a group of people with low blood pressure, who had a large number of chronic complaints of a protean character, Hamilton believes that these patients were suffering from a psychoneurosis, a disorder which is extremely common and which bears no relationship to the low blood pressure. Furthermore, he protests informing the patients that their condition is due to low blood pressure, because in those neurotic individuals it gives them something definite on which to pin their complaints; having their trouble labeled they will let it go at that without making efforts to improve or help themselves. It is of course to be understood that the author is speaking of chronic, long continued low blood pressure and not the sudden drop in pressure which is associated with acute disorders or even chronic infective diseases of varied etiology.

The author makes a good case for many of his observations, but it must be confessed that many physicians will be skeptical of his ideas because hypotension is so commonly found with substandard physical conditions.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

CURRENT MEDICAL PROBLEMS

There are three great problems pressing for immediate attention by the medical profession as follows: First, the return of veteran medical officers to private practice as soon as military necessity will permit; second, the development and expansion of prepayment voluntary medical insurance plan; third, the thorough study and analysis of the Wagner-Murray-Dingell Bill, S. 1050 and H. R. 3293. This year's edition of the above bill is 195 pages, is more com-

prehensive and more far reaching than the previous bills. There has been considerable activity in medical circles in preparing opposition to this federalization of medicine. The July 21 issue of the American Medical Association Journal, page 883, contains the following:

CONSTRUCTIVE PROGRAM FOR MEDICAL CARE

PREAMBLE

The physicians of the United States are interested in extending to all people in all communities the best possible medical care. The Constitution of the United States, the Bill of Rights and the "American Way of Life" are diametrically opposed to regimentation or any form of totalitarianism. According to available evidence in surveys, most of the American people are not interested in testing in the United States experiments in medical care which have already failed in regimented countries.

The physicians of the United States, through the American Medical Association, have stressed repeatedly the necessity for extending to all corners of this great country the availability of aids for diagnosis and treatment, so that dependency will be minimized and independence will be stimulated. American private enterprise has won and is winning the greatest war in the world's history. Private enterprise and initiative manifested through research may conquer cancer, arthritis and other as yet unconquered scourges of humankind. Science, as history well demonstrates, prospers best when free and unshackled.

PROGRAM

The physicians represented by the American Medical Association propose the following constructive program for the extension of improved health and medical care to all the people:

1. Sustained production leading to better living conditions with improved housing, nutrition and sanitation which are fundamental to good health; we support progressive action toward achieving these objectives.

2. An extended program of disease prevention with the development or extension of organizations for public health service so that every part of our country will have such service, as rapidly as adequate personnel can be trained.

3. Increased hospitalization insurance on a voluntary basis.

4. The development in or extension to all localities of voluntary sickness insurance plans and provision for the extension of these plans to the needy under the principles already established by the American Medical Association.

5. The provision of hospitalization and medical care to the indigent by local authorities under voluntary hospital and sickness insurance plans.

6. A survey of each state by qualified individuals and agencies to establish the need for additional medical care.

7. Federal aid to states where definite need is demonstrated, to be administered by the proper local agencies of the states involved with the help and advice of the medical profession.

8. Extension of information on these plans to all the people with recognition that such voluntary programs need not involve increased taxation.

9. A continuous survey of all voluntary plans for hospitalization and illness to determine their adequacy in meeting needs and maintaining continuous improvement in quality of medical service.

10. Discharge of physicians from the armed services as rapidly as is consistent with the war effort in order to facilitate redistribution and relocation of physicians in areas needing physicians.

11. Increased availability of medical education to young men and women to provide a greater number of physicians for rural areas.

12. Postponement of consideration of revolutionary changes while 60,000 medical men are in the service voluntarily and while 12,000,000 men and women are in uniform to preserve the American democratic system of government.

13. Adoption of federal legislation to provide for adjustments in draft regulation which will permit students to prepare for and continue the study of medicine.

14. Study of postwar medical personnel requirements with special reference to the needs of the veterans' hospitals, the regular army, navy and United States Public Health Service.

This as you will see represents the position of the American Medical Association in supplying adequate medical care and improved health to all the people of the United States. No matter how perfect these general principles, in the final analysis success or failure will rest upon the active interests, help, cooperation, and all-out drive of the state and local societies and individual physicians in carrying out the work proposed.

The State Society has also sent out to every member of the State Society a reprint of a recent editorial appearing in the American Medical Association Journal with an analysis of the Committee on Legal Medicine of this bill. It his hoped that this will prove of interest to the profession and will give them the opportunity of gathering some idea as to what is being proposed in Congress to regiment the profession of medicine. It is hoped also that every member of the State Society had the opportunity of listening in on the radio program on last Thursday, July 19, when there was discussed before "America's Town Hall Meeting of the Air" the question of the Wagner bill. From the above you can understand the intense activity and interest being manifested by the national as well as the local societies in opposition to this pernicious form of legislation. Every doctor should write to his senators and representatives his views on this proposed legislation as soon as the above material has been properly analyzed. It is essential that these opinions be brought in a personal way to our Congressmen in Washington.

Recently the Committee on Postwar Medical Planning sent out to every doctor in the military service a reprint covering suggestions for their benefit. This material appeared in a recent issue of the New Orleans Medical and Surgical Journal. This represents a constructive attempt to render vital aid and help to the returning medical men after information secured from questionnaires was obtained from them. A great deal of work in the future is contemplated by our Committee on Postwar Planning. The Committee on Information of the American Medical Association is sending out to each doctor in the Armed Forces the resumé of its conclusions and recommendations, resulting from the survey which it had made through the various states as to postwar needs for civilian practice of medicine. Questions of internships, residences, and desirable locations for those returning are made a part of this report.

The Cancer Committee of the Louisiana State Medical Society has recently sent out notices to every parish asking that if they do not have already a Cancer Committee that one be appointed. This is especially essential now as the State Cancer Committee is very active, planning for many constructive projects for the future which require the cooperation of our various parish medical societies. The opportunity now appears for a great development in the prevention and treatment of cancer, so do lend your aid and support to this worthy cause.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR OF MEETINGS

August 1. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.

August 2. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.

Executive Committee, Baptist Hospital, 8 p. m.

August 6. Board of Directors, Orleans Parish Medical Society, 8 p. m.

August 15. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.

August 16. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
August 23. DePaul Sanitarium Staff, 8 p. m.
August 24. L. S. U. Faculty Club, 8 p. m.
August 27. Board of Directors, Orleans Parish Medical Society, 8 p. m.
August 29. Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
August 30. Clinico-pathologic Conference, Touro Infirmary, 12:00 noon.
August 31. New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

The July scientific meeting of the Orleans Parish Medical Society, which was held on July 9, was as follows: Legal Coagulation by Dr. Robert E. Farley, Dean, Law Department, Tulane University.

NEWS ITEMS

Dr. Edgar Hull attended a meeting of the Eighth District Medical Society in Alexandria June 4. Dr. Hull presented a paper entitled, "Errors in Diagnostic Philosophy."

Dr. F. L. Jaubert was re-elected president of the Louisiana Society for Crippled Children at the annual meeting of that organization recently held in New Orleans.

Dr. Roscoe L. Pullen received the alumni achievement award at Knox College commencement June 11. This award is given annually to the alumnus who has contributed most to humanity during the year. Dr. Pullen is the first physician among eight honored with the award.

Dr. Julius Lane Wilson recently attended a meeting of the American Trudeau Society in New York of which he is the retiring president.

Dr. Charles Gelbke was awarded the annual plaque for outstanding civic service on the Westbank, at the Ninth Annual Banquet of the Westbank Rotary Club held in the Gold Room of the Roosevelt Hotel June 19.

NEWS OF MEMBERS IN MILITARY SERVICE

Lt. Daniel W. Beacham is on detached service in Belgium after having served with the 231st General Hospital in Germany. He will rejoin his group in Germany shortly.

M. L. Stadiem has been promoted to Lieutenant Colonel. Lt. Col. Stadiem continues to be stationed at a General Hospital in England where he is the chief of a surgical service.

Commander James K. Stone is in command of a 200-bed civilian general hospital which has been set up in 26 quonset buildings on Guam. Commander Stone's staff includes 145 navy corpsmen, five native corpsmen and 22 native nurses.

MAX M. GREEN, M. D., Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

WALTER REED MEMORIAL MEDALS

It may be of interest to note that the Chairman of the Committee on Walter Reed Memorial, Dr. A. V. Friedrichs, has recently completed the design and purchased a supply of medals for the Walter Reed Memorial Fund. These medals will be distributed to the medical students of the Louisiana State University and Tulane University who have been selected to receive them, and a supply will be kept on hand for future use.

To the following men have been awarded the Walter Reed Memorial prize: William R. Whitehouse and Arthur L. Koven, 1942; S. A. Trufant III, 1943; Emile A. Bertucci, Jr., and Harry B. Caplan, 1944.

ANNIVERSARY OF THE ARMY MEDICAL DEPARTMENT

The Army Medical Department celebrated its 170th anniversary on July 27 this year with the realization that it has grown into the largest organization of the kind ever known and that it is giving this nation's army the best medical care that soldiers have ever received.

From its inception in 1775 shortly after General George Washington became Commander-in-Chief of the Continental Army until the present day, the Army Medical Department has made steady progress in military medicine, it has made scientific discoveries that have benefited all of mankind; but never has its progress in both of those categories been so rapid as in recent years.

The Honorable Robert P. Patterson, Under-Secretary of War, in a tribute to the work being done by the Medical Department under Major General Norman T. Kirk, the Surgeon General, recently said that no army at any time in history has achieved a record of recovery from wounds and freedom from disease comparable to that of the American Army in this war. Mr. Patterson said also that the Medical Department is attaining new records in almost every field of its endeavor. He cited the Army's record of saving nearly 97 of every 100 wounded soldiers who reach Army hospitals, the disease rate of less than one in one thousand, and similarly startling figures with reference to malaria, the dysenteries, and other diseases, showing that the Medical Department has established effective control on all disease fronts.

SOUTHERN BAPTIST HOSPITAL

The Clinical Staff Meeting of the Southern Baptist Hospital was held at 8:00 p. m. June 26, 1945.

The program for the evening was as follows: Case presentation: "Pneumonectomy for Bronchogenic Carcinoma" by Dr. Howard Mahorner; "Chronic Constrictive Pericarditis" by Dr. Maurice E. St. Martin; a motion picture: "Partial Pericardectomy and Epicardectomy for Calcified Constricting Pericardium," under the direction of Dr. Stuart W. Harrington of Rochester, Minn.

The death report which was discussed by Dr. Philip Tiller included six cases of carcinoma, three of which malignancies were present in the lung.

OCHSNER CLINIC STAFF MEETING

There was held a meeting of the Ochsner Clinic Staff members and fellows on Friday, July 27, 1945, at 8:30 p. m., in the reception room of the Ochsner Clinic. The program was as follows: "Conservative Treatment of Fractures of the Carposcaphoid," by Captain George D. Bercovitz, M. C., Station Hospital, New Orleans Port of Embarkation; "Supplementary Remarks on Metabolic Diseases of Bone," by Dr. William Parson, Department of Medicine, Ochsner Clinic; "Bone Repair," by Dr. Robert P. Howell, Fellow in Surgery, The Alton Ochsner Foundation.

EIGHTEENTH ANNIVERSARY ISSUE OF THE HEBREW MEDICAL JOURNAL

Volume I, 1945, eighteenth anniversary issue of the Harofe Haivri (The Hebrew Medical Journal), edited by Moses Einhorn, M. D., has just made its appearance. This special issue is dedicated to the late Henrietta Szold, distinguished humanist and Zionist, who harnessed American Jewish womanhood in a great organization, Hadassah, which is responsible for the vast network of medical and sanitary installations in Palestine, making it the outstanding health center of the whole of the Middle East.

ALVARENGA PRIZE

In recognition of his important work upon the various types of Rh factors and on their genetic transmission, the College of Physicians of Philadelphia awarded on July 14, 1945, the Alvarenga Prize for this year to Alexander S. Wiener. Dr. Wiener will give the Alvarenga lecture before the College of Physicians of Philadelphia and the Philadelphia County Medical Society on October 3, 1945, on "Rh Blood Factors in Clinical Medicine."

The Alvarenga Prize was established by the will of Pedro Francisco daCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, "to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883."

INFECTIOUS DISEASES IN LOUISIANA

For the week ending June 9 the following diseases, occurring in numbers greater than 10, were reported to the State Board of Health: Fifty-two cases of measles, 37 of malaria, 19 each of scarlet fever and of septic sore throat, 16 each of mumps and unclassified pneumonia, and 12 of pulmonary tuberculosis. One case of poliomyelitis was reported from Lafourche Parish and one case of smallpox from Madison Parish. Most of the cases of malaria were contracted within the continental United States. For the following week only five reportable diseases occurred in numbers more than 10, and except for pulmonary tuberculosis with 42 cases, the other cases were few in number, for example, 15 cases of hookworm infestation, 14 of scarlet fever, 12 of malaria, and 11 of mumps. This week there was a case of poliomyelitis reported from Caddo Parish and three cases of typhus fever reported from three different parishes. For the week closing June 23 pulmonary tuberculosis again led the list with 59 cases, followed by 57 of mumps, 22 of unclassified pneumonia, 16 of typhus fever, 15 of malaria, 12 of scarlet fever, and 10 of measles. The rather remarkably large number of typhus fever cases were scattered throughout the state, with the exception of eight which were found in Iberia Parish. Parenthetically, it might be noted that so far this year there have been more patients suffering from typhus fever than from typhoid fever. The last week in the month closing June 30 contained the

statistics on the venereal diseases. These will be given first. There were reported 1,724 cases of gonorrhea, 1,195 of syphilis, 24 of chancroid, 16 of granuloma inguinale, and 17 of lymphopathia venereum. Of the non-venereal cases there was a perfectly surprising increase in the number of respiratory tract infections. One hundred and five cases of unclassified pneumonia were listed and 46 of pneumococcic pneumonia, neither of which disease has been reported in large numbers for some months. Another of the peculiarities of this present report is that 40 cases of rheumatic fever were also listed and 132 of cancer, neither of which disease has occurred in numbers greater than 10 for a long period of time. In addition the more common diseases included 64 cases of pulmonary tuberculosis, 49 of malaria, 46 of measles, 30 of septic sore throat, 14 of typhus fever, 13 of hookworm, and 10 each of mumps and German measles, as well as 11 cases of chickenpox. Referring again to the typhus fever cases, so far there have been listed 87 of these cases this year and only 63 cases of typhoid fever. Two cases of poliomyelitis were reported from Caddo Parish. The typhus fever cases were very well scattered throughout the different parishes in the state. Of the over 1,000 cases of syphilis that were reported this week only 189 of them were from military sources. Thirteen of the cases of malaria also were reported from this same source.

HEALTH IN NEW ORLEANS

The Bureau of the Census, Department of Commerce, reported that for the week ending June 16 there were 146 deaths in the city as contrasted with 128 the previous week. Of these 146 deaths, 81 were in the white people, 65 in the colored, and 15 were children under one year of age For the succeeding week which terminated June 23, the number of deaths fell to 134, proportioned 88 white, 46 non-white, and 10 in infants. The week which closed June 30 disclosed that there were 20 more deaths in the city than in the previous week. Of the 154 fatalities, 104 were white, 50 were colored, and 13 were in infants. The last week for which the reports were available showed that only 131 people succumbed to disease or accident in New Orleans. There was a decrease in both races, 86 white people dying and 45 colored, with only eight of the deaths being in children under one year of age. The number of deaths in New Orleans in contrast to the three-year average is much smaller for the year 1945 than the previous three years, and that in spite of the increase in population of the city.

NEWS ITEMS

Eli Lilly and Company has made a grant of $5,000 to the Alton Ochsner Medical Foundation for research. It is being used for the study of endocrine and metabolic diseases under the supervision of Dr. William Parson. Dr. Albert Segaloff, formerly of Vanderbilt University, will join the Foundation staff on August 1 and will have direct charge of the endocrine laboratory.

The American College of Radiology monthly news letter states that 10.6 million square feet of medical radiographic film has been allotted for civilian health service for the third quarter of 1945. This is practically enough film to meet the minimum requirements of civilian doctors in civilian hospitals.

The Leslie Dana Gold Medal, awarded annually for oustanding achievements in the prevention of blindness and the conservation of vision, will be presented this year to Dr. William Zentmayer of Philadelphia, it is announced by the National Society for the Prevention of Blindness.

HEALTH OF TROOPS HERE IS EXCELLENT

During this past winter and spring the health of troops stationed in the United States has been excellent, surpassing that of any previous war year. The low hospital admission rate for all diseases reflects fewer communicable conditions, as it is during this period of the year that infectious diseases usually predominate.

There were less respiratory diseases than in any previous war year, although during May there was a slight rise in these cases. Pneumonia, measles, scarlet fever, meningitis, and rheumatic fever were all less prevalent than during the winter and spring of 1944. The only important infectious diseases of which this was not true were venereal diseases and infectious hepatitis.

Relapses in the United States of malaria infections acquired in tropical areas overseas increased each month until March 1945, but have since declined slightly. With malaria control in all overseas areas now greatly improved, the number of relapse cases should continue to decrease.

The fact that most of our troops are well seasoned and there are fewer newly inducted troops is responsible in part for his improved health record. Most Army hospital beds here are now occupied by patients evacuated from overseas.

—From the Office of the Surgeon General, Technical Information Division, Washington, D. C.

CORRESPONDENCE

July 12, 1945
Camp Philadelphia
Near Rheims, France

Dear Doctor Musser:

I want to thank you and the society for sending the journal each month. I wonder if you know how much all the news really means to me.

You do not know me except as a name on your membership roster, therefore I should like to give you a little of my history.

1. I have been overseas since December, 1944; have spent my time in France, Belgium and Germany.

2. Our unit crossed the Rhine during the Ruhr Pocket fighting, went into Nordhausen during the Harz Mountain battle and finished at Halle where the fighting still continued for some days.

3. We really saw all of the atrocities at Nordhausen and at Weimar where the concentration camps were at their best.

4. We each have two battle stars, whether earned or not is another question.

5. I have been chief anesthetist of our unit for the past year and have had some interesting cases.

6. On March 16, 1945 the C. O. very graciously had me promoted to Captain, a rank I will probably hold for some time in the Pacific. There seems little hope for our return to the States.

I should like to state that Drs. P. H. Jones and Ansel Caine know me well. My hospital training was obtained at Charity and Southern Baptist at New Orleans.

Thanks again for the journal.

Sincerely,

T. C. Sherwood

DR. EDGAR LEE SANDERSON
(1878-1945)

One of our prominent Caddo Parish physicians died on June 8 in Shreveport. Dr. Sanderson graduated from Tulane in 1908 and promptly became a member of the State Medical Society, in which organization as well as in the Shreveport Medical Society he took an active interest up until the time of his death. He was a past president of this latter organization and served in the House of Delegates of the former. For six years he was the superintendent and chief surgeon of the Shreveport Charity Hospital. His many friends will miss this popular and well liked medical man.

DR. JOSEPH DENEGRE MARTIN
(1879-1945)

One of the outstanding otolaryngologists of the South, Dr. Joseph D. Martin, died at New Iberia on July 6, 1945 after a rather protracted illness. Dr. Martin was born in 1879 in Louisiana and spent a greater part of his active medical life in New Orleans. A few years ago on account of his health he moved to New Iberia where he continued to practice his specialty. A man of medical attainments, Dr. Martin was also a man of great personal attraction, cheerful and happy at all times. He was loved and respected by his patients, and was a great and loyal friend to all his doctor acquaintances.

DR. WILLIAM L. ATKINS
(1893-1945)

Dr. William L. Atkins, who died in Shreveport on June 16, was one of the most prominent eye, ear, nose and throat specialists in Northern Louisiana. He graduated from the University of Louisville in 1916 and became a member of the state society in 1920, and since that time took a relatively active part in organized medicine. Dr. Atkins was an outstanding practitioner of Shreveport whose untimely death will be mourned by a large number of patients and friends.

BOOK REVIEWS

Internal Medicine, Its Theory and Practice: Edited by John H. Musser, B. S., M. D., F. A. C. P. Ed. 4, Philadelphia, Lea & Febiger, 1945. Pp. 1518. Price $10.00.

This textbook has been so completely satisfactory from the beginning that no reviewer should do more than call attention to a new edition. The editor points out that many of the chapters have been extensively revised and that, despite numerous deletions, the size of the book has grown to approximately 1500 pages. The list of contributors is sufficient evidence for the quality of the contents.

The infectious diseases, now so prominent for obvious reasons, are covered by such authorities as Reimann, Kinsella, Pepper, Spink, Chesney, Craig, Faust and others. The uses of penicillin and the sulfonamides are described in detail. Disorders of the heart, kidney and blood vessels are discussed by F. M. Smith, W. S. McCann and E. V. Allen. A. L. Bloomfield wrote the chapter on gastrointestinal diseases, James Alexander Miller that on the respiratory tract and Robert A. Cooke the section on allergy. J. H. Means and Fuller Allbright collaborated on the endocrine systems; C. C. Sturgis and E. B. Krumbhaar covered the hematopoetic organs; Kerr and Mettier the diseases of the locomotor system; and Strecker and Wilson the nervous system. Nutritional disorders are described by Musser and Goldsmith, metabolic disturbances by Wilder and Sprague, and short chapters on toxic disorders have been contributed by Barr and Pincoffs.

It is difficult to see how a more useful reference work could be constructed.

THOMAS FINDLEY, M. D.

Anatomy: By Donald Mainland, M. B., Ch. B., D. Sc. New York, Paul B. Hoeber, Inc., 1945, pp. xvii plus 863, figs. 61. Price $7.50.

This volume is published in the *Medical Students Series*, which aims toward the making of "books which present by sound teaching technics the basic foundations of their subjects, omitting non-essentials which the student has not time to cover." (Editor's preface.) The author, Professor of Anatomy at Dalhousie University, explains that the book is the outgrowth of a philosophy and practice of teaching which has been tested in his own classes. Some readers will recall Dr. Mainland's thoughtful articles on the functions of anatomy in medical education and the mechanics of teaching the subject. His text is based upon the principles set forth in those articles, which are here re-emphasized both in direct statement and by their embodiment in the makeup of the book. The cardinal note of the author's viewpoint is the belief that the chief function of the undergraduate course "is to help students to learn how to educate themselves." He strives to accomplish that purpose while at the same time guiding the students into a knowledge of anatomy.

Mainland's *Anatomy* is a text-book quite different from any other in the field. One distinction is its small bulk. However, as the author states, "this book could not justifiably be entitled 'Anatomy Made Easy.' On the contrary, anyone who uses it must work hard and think hard, not only because it is condensed, but because it contains ideas and problems as well as facts." The text is presented in three main parts. Part I (26 pages) deals with the aims and methods of anatomy. Part II (127 pages) gives an over-all view of anatomy: the body as a whole, with emphasis on variation; bones; joints, muscles and fasciae; blood vessels and lymphatic system; nerves; skin and appendages. Part III (589 pages) is devoted to regional anatomy, with successive sections on upper limb, lower limb, thorax, etc. Seven appendices (47 pages) are devoted to as many topics: observations on fresh mammalian cadavers; radiology; reading and writing; postnatal ossification of limbs; normal weights of organs; tooth eruption dates; adult pelvic dimensions; segmental cutaneous nerve supply. Questions are inserted throughout the text, to provoke thought and to illustrate clinical applications; answers to these questions are listed in the back of the book. There is a list of references to literature (38 pages), separated by chapters. These references are cited in the text. The book is designed for use in conjunction with an atlas and illustration is accordingly restricted.

HAROLD CUMMINS, PH. D.

Operations of General Surgery: By Thomas G. Orr. Philadelphia, W. B. Saunders Company, first edition, 1944. Pp. 723 with 1396 step-by-step illustrations on 570 figures. Price $10.00.

This book is written primarily to acquaint the general surgeon with the essentials of surgical technic in general surgery which have proved satisfactory to the author. Attempt has been made to bring out the important fundamentals in surgery. A brief outline of each procedure is given and illustrated when possible.

The reviewer thinks that this is not a text for a beginner in surgery but may have a definite place in the surgeon's library for brief reviews, as in general the author has given a rather concise but comprehensive and up-to-date description of the practical procedures used in general surgery.

REYNOLD PATZER, M. D.

Intracranial Arterial Aneurysms: By Walter E. Dandy. Ithaca, New York, Comstock Publishing Company, Inc., 1944. Pp. 147. Price $2.50.

This monograph, based on Dr. Dandy's experiences in 108 patients with 133 aneurysms, provides a complete dissertation on the surgical aspect of the little known condition, intracranial arterial aneurysms. The introductory chapter, containing a general review of the incidence, types, symptomatology and diagnostic procedures, is followed, in the next chapter, by a discussion of the cases according to an anatomic classification. In the third chapter, written by Dr. Dorcas Hager Padget, the embryology and anatomy of the circle of Willis are described. The last two chapters are devoted to a discussion of the preoperative and operative treatment of cases and the results obtained; in 64 aneurysms treated surgically 20 cures were effected.

Graphic and ample illustrations punctuate the discussion. Detailed tabular information on the series of cases and an exhaustive bibliography are appended. The general surgeon will find this contribution useful as a reference work and the neurosurgeon will want to add a copy to his bookshelf.

DEAN H. ECHOLS, M. D.

Pathology of Internal Diseases: By William Boyd, M. D., F. R. C. P., F. R. S. C. Lea & Febiger, Philadelphia. 4th ed., thoroughly revised, published December, 1944. Octavo, 857 pages, illustrated with 366 engravings and 8 colored plates. Price $10.00.

The fourth edition of this very popular textbook has undergone rather extensive revision. Dr. Boyd has added to and enlarged his discussion of many new diseases which have come to the front in the past few years. In spite of these additions he has succeeded in reducing the size of the book from the previous editions, a testimonial to his quality of writing which characterizes this work. This book will continue to be one of the most outstanding textbooks of pathology available to the physician.

ROSCOE L. PULLEN, M. D.

Physiology in Health and Disease: By Carl J. Wiggers, M. D., D. Sc., F. A. C. P. Lea & Febiger, 1944. 4th ed., thoroughly revised. Price $10.00.

Dr. Wiggers is to be commended for having made a most thorough revision of his textbook at this time. Much of the text has been rewritten, some old material deleted and considerable new material has been added relating particularly to "war physiology." There are, thus, several new chapters on aviation physiology and discussions of the more recent work on acclimatization, blood transfusion and shock. The references to original articles, monographs and reviews have also been brought up to date and represent a very valuable supplement to the text material. Many new figures have been introduced and some of the poorer ones of previous editions replaced with better illustrations. As in the previous editions, the physiology of the circulation, which is Dr. Wiggers' special field of interest, is particularly well handled. The text, as it is now constituted, is the most "modern" of the available books on physiology and certainly among the best.

H. S. MAYERSON, M. D.

Principles and Practice of Surgery: By W. Wayne Babcock, M. D. Philadelphia, Lea & Febiger, 3rd edition, 1944, pp. 1331. 1141 illustrations and 8 colored plates. Price $12.00.

This newly revised and rearranged textbook of surgery is written by thirty-seven different authors, each a specialist in his own field. Care has been taken to avoid duplications with the use of the cross reference and index. Conflicting opinions have been ironed out by discussion. Particular attention has been given to very recent advances in surgery, including those of the war. The majority of chapters are quite complete, concise and well illustrated. It can be recommended to students and practitioners alike as a practical book of easy reference. It is well up-to-date in regard to new discoveries, diagnoses, and treatment. Each chapter is accompanied by a very extensive bibliography.

REYNOLD PATZER, M. D.

PUBLICATIONS RECEIVED

Lea & Febiger, Philadelphia: Refraction of the Eye, by Alfred Cowan, M. D.

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